

THE ALCHEMY OF LIGHT

Geometry and Optics in Late Renaissance Alchemical Illustration

BY

URSZULA SZULAKOWSKA



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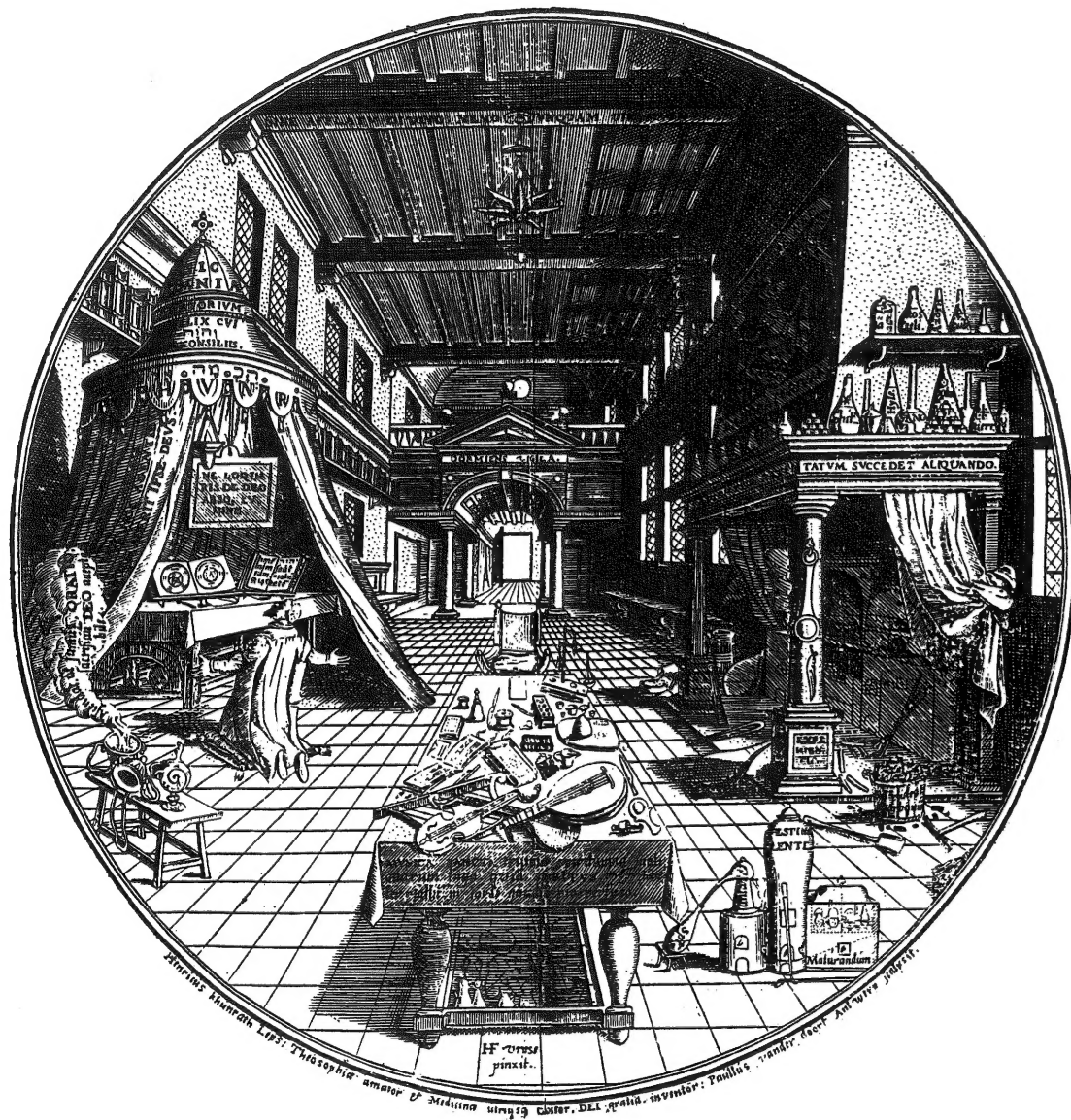


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Jan Vredeman de Vries, "Oratory/Laboratory" (1595)
from Heinrich Khunrath, *Amphiteatrum Sapientiae Aeternae* (Hanover, 1609)
(by permission of the Bodleian Library, Shlf. mk: MED. R. I. 9. S)



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For my family,
especially
Petronela Brodalka

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INTRODUCTION

From the mid-sixteenth to the late-seventeenth century, one of the most important metaphysical concepts in Western Europe was that of the divinity and generative power of light. At the heart of the Counter-Reformation, the Jesuits located the Eucharistic monstrance whose blazing aura of gold displayed the sacramental authority of the Church to reunite the repentant sinner with God. Subsequently, this vision of the divine light of the Holy Spirit, as the instrument of union with God, was expressed less doctrinally in the moderated pietism of the seventeenth century Cambridge Platonists.¹ Such historical currents evolving a personalised interpretation of scripture, in which God and human were united through the indwelling light of the Spirit, rather than through the rites of the Church, were strengthened in hermetic and neoplatonic circles by the Christian cabbalah. This theosophical system envisaged God creating the world out of his own divine luminosity; hence, for cabbalists, the universe was not only pervaded by the divine light of God, it was united monistically to him.

Although there has been much dispute among historians concerning the specific role of hermetic theosophy in the development of Lutheran pietism, scholars, such as Peuckert and Stoeffler, have acknowledged that an important contribution was made by radical theologians of the late sixteenth century, such as Valentin Weigel and Johannes Arndt, who were influenced by Paracelsian cabbalism.² Weigel and his followers began to produce their own interpretations of scripture in which the sacramental rituals of the Lutheran Church and its demands for political authority increasingly appeared superfluous and objectionable.

Most historians have neglected the contribution of the alchemists to these distinctive and revolutionary theological movements, at best mentioning in passing figures such as Heinrich Khunrath (1560-1605), Michael Maier (1568-1622) and Robert Fludd (1574-1637). Yet, their Paracelsian-cabbalistic metaphysics of light revolutionised contemporary alchemical theory, even prompting its adepts to deploy the rays of the sun and the stars in their practical work. In turn, their alchemised theol-

¹ Margaret Llasera, "Concepts of Light in the Poetry of Henry Vaughan", *The Seventeenth Century*, 3, (1988): 47-61.

² Will-Erich Peuckert, *Pansophie* (Berlin: Erich Schmidt, 1956), 2, pp. 185-214, 290-308; F. Ernest Stoeffler, *The Rise of Evangelical Pietism* (Leiden: E. J. Brill, 1965), pp. 180-208.

ogy was a widely publicised and controversial contribution to the debates between the established Lutheran Church in Germany and the reformist movements inspired by Melancthon and sponsored by Calvinist preachers in the late sixteenth and early seventeenth centuries.

Historians of alchemy have almost ignored the central role of the imagery of light in late sixteenth century Paracelsian alchemy, regarding this as being a poetic expression of some vague mystical experience, or a flowery literary convention. Debus is one of the few to have discussed this Paracelsian metaphysics of light in his extensive studies of Fludd's alchemy.³ More recently, Clulee has examined the natural philosophy of the Elizabethan theurgist, John Dee (1527-1609), noting, in particular, Dee's use of scholastic optical theory in the astronomical magic of his *Propaedeutica Aphoristica* (1558). Clulee, however, did not relate Dee's astral theurgy to alchemy, nor to theosophy, since he did not consider Dee to be a Paracelsian, although he acknowledged the innovatory significance of Dee's cabbalism in his later alchemical treatise, the *Monas Hieroglyphica* (1564).⁴ Few other scholars have examined critically the references to celestial light in late Renaissance alchemical texts and illustrations and major alchemists of the period, such as Khunrath and Maier, still await a definitive study.

In view of the fact that scholarly research into the alchemical discourse of light is relatively little developed, the present study will attempt to redress this absence by focusing on Renaissance ideas of the generative power of the light of the sun, stars and planets. Renaissance alchemists, such as Khunrath and Fludd, conceptualised the astral rays of light as being the agents of the "anima Mundi", the cosmic soul or "Anthropos", out of whose primeval substance, the quintessence or "azoth", the universe was generated. Cabbalistic alchemists, moreover, identified the cosmic Anthropos with Christ, whose sacred presence within the alchemical process transformed it into a sacramental act, paralleling that of the Lutheran Eucharist.

Alchemists, since hellenistic times, had relied on the effects of the stars, but a coherent theory of the astral virtues began to develop only in the late fourteenth century, appearing in its full expression in the work of Paracelsus (1493-1541). In addition, John Dee added his own distinctive contribution to the sixteenth century theory of the generative stellar rays. These alchemists provided the basic foundation for Khunrath's alchemi-

³ Allen G. Debus, "The Sun in the Universe of Robert Fludd", *Le Soleil à la renaissance* (Brussels, 1965).

⁴ Nicholas Clulee, *John Dee's Natural Philosophy* (London; New York: Routledge, 1988).

cal deployment of light-rays and astral virtues, but Khunrath went beyond his original sources in uniting Paracelsian cabbalism with Weigel's pietistic Christology, producing, thereby, an alchemical polemic expressing the concept of Christ as the philosopher's stone who transmuted the soul through the light of Eternal Wisdom. Thus, by the early seventeenth century, the alchemical use of celestial rays and natural sun-light involved more than chemistry, since this practice was, in effect, a religious and theurgical ritual. Indeed, late Renaissance alchemists developed a conceptual structure which could be called an "alchemy of light", a syncretic philosophy integrating the discrete intellectual and mystical currents of Pythagorean geometry, neoplatonism, medieval optics, Paracelsian alchemy and cabbalism.

The concept of the divinity of light had been transmitted from the most ancient times to the late hellenistic philosopher Plotinus, as well as to various gnostic and hermetic groups, such as those connected with the theosophical writings known to the Renaissance as the *Pymander* of Hermes Trismegistus. In origins the term "hermeticism" referred to the late hellenistic teachings of Trismegistus and his followers, such as Asclepius. This theosophical system had emerged by the second century BC in Egypt, but at first it did not include alchemy which developed only during the first Christian centuries, alchemical literature being added to the earlier hermetic corpus by the second century AD. According to Copenhaver, these alchemical texts, as well as other magical treatises, are integrally related to the seventeen, purely theological, hermetic writings. He argues that eighteenth century scholars, prejudiced against occultism, had made a false distinction between the various components of the corpus which would have been meaningless to the contemporary followers of the original school of thought. Consequently, hermeticism is not only a theosophical system, but also a practical theurgy.

The development of hermeticism was historically distinct from that of neoplatonism and it had been ruthlessly criticised by Plotinus for its superstitious practices and inconsistent theological structures. Nevertheless, Renaissance philosophers, such as Ficino, disregarded Plotinus' animosity towards the hermeticists and they accommodated both systems within their vision of a "prisca theologia" anticipating the Christian religion.⁵ Plotinus' sophisticated theogony of light was received by medieval Western philosophers in the moderated Christian versions of Pseudo-Dionysos and St. Augustine. In the fifteenth century, as a result of the recovery and

⁵ For discussion of the hermetic corpus see Brian P. Copenhaver, *Hermetica* (Cambridge University Press, 1992), pp. xxxii-l.

translation of the neoplatonic and hermetic Greek texts, the Florentine humanist Marsilio Ficino began to promote the use of astral rituals in a medical and psychological context. His younger contemporary Pico della Mirandola, like Ficino, integrated these practices with Christianity, but in addition he introduced the cabbalah into Renaissance hermeticism.⁶

The German natural philosopher and magus Cornelius Agrippa (1486-1533) popularised astral magic through his treatise, *De Occulta Philosophia* (1533), justifying such practices by claiming the existence of a natural sympathy between the human-being and the universe, an idea already well-known to the middle ages. On the model of Agrippa, this venerable notion of the harmony between celestial and human realms was systematised for medical use by Paracelsus who created an analogical structure known as the "doctrine of signatures". He taught that in all material entities there existed hidden virtues whose qualities corresponded to those of the planetary bodies in the heavens. These occult virtues he called "astra" to designate the "signatures" (the impressions) of the stars on matter. Paracelsus argued that, due to the intimate unity between heaven and earth, alchemical processes had to be correlated with the movements of the planetary bodies and the fixed stars. Through Ficino, Agrippa and Paracelsus, John Dee encountered the theory of astral influences which provided him with the foundation for his own natural philosophy, medicine and practical magic. In fact, it was Dee's ambition to devise a more efficient way of exploiting stellar and solar radiations in all aspects of human endeavour, but most especially in medicine and alchemy.

In addition to his interest in astrological sympathetic magic, there was another, very unusual, influence on Dee's alchemy which was of equal importance to his hermetic sources, namely, optics, the medieval scholastic science of light. In his *Propaedeumata Aphoristica* (1558) Dee used this pragmatic body of knowledge for more esoteric purposes.⁷ Specifically, by means of catoptrics (the reflection and refraction of light-rays by mirrors and lenses), Dee thought that celestial rays could be manipulated more reliably to enhance all aspects of human affairs. The metaphysical rationale for Dee's astronomical and optical magic was provided by the

⁶ Martin Plessner and Felix Klein-Franke (Marsilio Ficino), *De Triplici Vitae libri tres* (1489) (Hildesheim; New York, 1978) esp Ch 3 "De Vita coelitus comparanda" (no pagination); Giovanni Pico della Mirandola, *Conclusiones nongentae in omni genere scientiarum* (pr. IB, 1532).

⁷ Wayne Shumaker, *John Dee on Astronomy. Propaedeumata Aphoristica (1558 and 1568)* (Berkeley; Los Angeles; London: University of California Press, 1978).

cabbalah, which he integrated into his alchemy in the 1560s. His fully developed system of natural philosophy was published in the *Monas Hieroglyphica* (1564) which combined optics, geometry, magic, alchemy, medicine and cabbalism.⁸

Dee's last published treatise was the *Mathematicall Preface* to Henry Billingsley's translation of Euclid's *Principles of Geometry* (1570).⁹ Although this essay has not been related to alchemy by Dee's scholars, nonetheless, it may have been an additional influence on Maier, Khunrath and Fludd. In the *Mathematicall Preface* Dee examined Pythagorean geometry in its practical and mystical aspects, although he did not relate his text to alchemy at any length, mentioning only briefly a practice called "Archemastrie" which comprised alchemy and other magical arts (*Math. Pref.* f. Aijr). In addition, another of his concepts in this treatise, that of "zogographie", could have had a special effect on alchemical illustration (*Math. Pref.* f. diiv). "Zographie" was a Pythagorean-based method of graphic depiction which Dee regarded as a conceptual art-form with a high philosophical status, since the "zogographer" drew only the forms of the eternal Ideas in the mind of God, rather than their base natural copies. Most significant for the present argument was Dee's inclusion of the single-point perspective system within the scope of "zogographie".

It should be noted that in 1595 there appeared in Khunrath's *Amphitheatrum Sapientiae Aeternae* (frontispiece) an illustration which employed exaggerated spatial effects. The peculiarly deep vista of this engraving of an alchemist's Oratory-Laboratory involved far more than naturalistic illusionism, since the spatial geometry functioned as a semiotic system in its own right, discoursing on the alchemical significance of light-rays.

According to Goldberg, fifteenth century Florentine painters such as Masaccio and Domenico Veneziano had used geometrical infrastructures, such as the one in Khunrath's treatise, both as an organisational device and as a signifying discourse (fig. 36).¹⁰ These graphic scaffoldings underlay the painted scene, operating as a conceptual sub-text which drew the viewer into a parallel metaphysical world. In order to clarify this interpretation of Khunrath's image of the laboratory, Goldberg's

⁸ C. H. Josten, "A translation of John Dee's 'Monas Hieroglyphica' (Antwerp, 1564)", *Ambix*, 12 (1964): 84-221 and in Lazarus Zetzner, *Theatrum Chemicum*, (Strassburg, 1622), 2, pp. 191-230 and (1659), pp. 178-215.

⁹ Allen G. Debus (introd.), *John Dee. The Mathematicall Preface* (New York: Science History Publications, 1975).

¹⁰ Jonathan Goldberg, "Quattrocento Dematerialization: Some paradoxes in a Conceptual Art", *Journal of Aesthetics and Art Criticism*, 35 (1976): 153-68.

model can be amplified by taking additional recourse to Peirce's semiotic taxonomy of three types of sign, namely, those of symbol, icon and index. First, however, it is necessary to understand the original intentions behind the development of the single-point perspective system during the early Renaissance.¹¹

The geometrical theory of this spatial system was first expressed by Leone Battista Alberti in his treatise on painting, *De Pictura* (Florence, 1435).¹² He had explained that the orthogonal lines of any architecture illustrated by the artist should be drawn as if they were running into the picture to meet in a single vanishing-point. In accordance with this new pictorial convention, in many fifteenth-century Florentine paintings of an interior scene the floor would be drawn in a chequer-board pattern to reinforce the same illusion of space receding to a vanishing-point. The technical term for this pictorial effect was the "pavimentum diminutionis" (fig. 1).¹³

Alberti had based his perspective system on the model of medieval optical diagrams which depicted the operation of light-rays in relation to the human eye (figs. 2, 11). Hence, in the semiotic functioning of the single-point system, its genealogy in medieval optics continues to operate as a sub-text. To use Derrida's terms, the original optical geometry which had provided the structure for single-point space continued to exist within it as a signifying trace.¹⁴ Derrida's "trace" (*le trait*) is the transcendental signifier unifying the disparate (and conflicting) elements of a discourse.¹⁵ Hence, the generic signifier of the single-point perspective system would be the eye of the viewer and its discourse that of the struggle between the rhetorical devices of the picture and the objective judgement of the interpretant.

The visual strategy of perspective space acquired a deeper spiritual significance in the context of Khunrath's alchemical illustration in which the generic signifier was transposed from the viewer's eye to that of God, who regarded the scene from a viewing-point transcending the space of both the physical world and of its pictorial copy. Khunrath's spatial con-

struction, thereby, acquired a "second-level signification" in Barthes' terms. Although the spatial geometry continued to function with its original signifiatory purpose (that is, producing the visual illusion of space), it had additionally accumulated other levels of meaning from a network of pre-existing symbols.¹⁶ In fact, the function of optical geometry in alchemy may have been related to that of religious Christian imagery, as a sympathetic magic drawing the viewer into the presence of God (frontispiece). Alberti in *De Pictura* had been interested in the use of rhetorical devices in painting and he had modelled his pictorial system on the persuasive techniques of Cicero and Quintillian. Hence, Alberti's perspectival construction aimed to promote such an effective illusion of reality that the viewer, automatically convinced by the visual text, would surrender his resistance to its implications.¹⁷

Taking the present analysis still deeper into the field of semiotics, the signifiatory mode of single-point perspective can be defined as that of the metonym, or index, in Peirce's terms.¹⁸ As a signifying mode, this type of space was intended to persuade the viewer that physical reality continued into the picture, progressing, in the case of Khunrath's engraving, to its culmination in the eye of God (frontispiece). In alchemical illustration this discursive visual mode provided a demonstrative proof of alchemical claims that matter could be united with its opposite, spirit, in the philosopher's stone. In Khunrath's image, however, there was more at stake, as will be discussed, for he employed this spatial rhetoric of the divine presence in order to authenticate his pietistic alchemical theosophy.

It was Khunrath, in fact, who produced a fully-developed cabbalistic "alchemy of light" in three of his works, published as the *Amphiteatrum Sapientiae Aeternae* (1595; 1609), *Chaos* (circa 1598) and *De Igne Magorum* (circa 1602-1604). For his cabbalistic ideas Khunrath relied on Johannes Reuchlin in *De verbo mirifico* (1494) and *De arte cabbalistica* (1517), as well as on Paracelsian theosophy. The central Jewish cabbalistic text, the *Zohar*, had derived its metaphysical concepts from neoplatonism, specifically from Plotinus' account of the manner in which the divine light of the First Principle had emanated the world from its own being. Khunrath's cabbalistic alchemy was centred on the theme of divine light as the Paracelsian "azoth" which, in turn, was Christ himself. He was not the first to

¹¹ Charles Hartshorne and Paul Weiss, *Collected Papers of Charles Sanders Peirce*, 2 (Cambridge: Harvard UP, 1932), pp. 156-73.

¹² See Cecil Grayson (L. B. Alberti) *On painting and on sculpture* (London: Phaidon, 1972).

¹³ John White, *The Birth and Rebirth of Pictorial Space* (London: Faber, 1957), pp. 113-34, esp. 121-26; Michael Kubovy, *The Psychology of Perspective and Renaissance Art* (Cambridge University Press, 1986), pp. 17-31.

¹⁴ Kubovy, pp. 17-31.

¹⁵ Jacques Derrida, *The Truth in Painting* (University of Chicago, 1987), pp. 191-98; Jacques Derrida, *L'Écriture et la différence* (Paris: Seuil, 1967), pp. 41-44, 409-11.

¹⁶ Roland Barthes, *Mythologies* (Paris: Seuil, 1957), pp. 109-59.

¹⁷ Kubovy, pp. 166-72. See also James S. Ackerman, "Alberti's Light" in Irving Lavin and John Plummer, *Studies in Late Medieval and Renaissance Painting in Honour of Millard Meiss* (New York, 1978), pp. 1-27.

¹⁸ Peirce, 2, pp. 170-72.

apply cabbalism to alchemy, since Joannes Pantheus of Venice had devised a comparable system in his *Voarchadumia* (1530) and Dee had also produced a cabbalistic alchemy in the *Monas Hieroglyphica* (1564). Khunrath, however, placed his cabbalism within a Christological framework, so much so, that his main concern from 1595 was not alchemical theory, but pietistic Christian theology, anticipating, perhaps, the alchemical mysticism of Jacob Boehme.

Khunrath may have developed his Christological alchemy in the mid-1590s, both as a response to anti-Christian tendencies within German hermetic circles and also as an expression of a pietistic Lutheranism which was critical of the doctrinaire, institutionalised creed of the time. His work, thus, belongs to the diverse ideological currents of the late sixteenth and early seventeenth centuries which, subsequently, manifested as the "Rosicrucian" movement. The supporters of the "Rosicrucian Manifestos" (1614; 1615) were a heterogeneous mix of reformist Lutherans, hermeticists, neoplatonists and practitioners of Agrippan and Paracelsian theurgy. Although many devoted Protestants, such as Maier and Fludd, polemicised on behalf of the Rosicrucians, there were also pagan and non-Christian influences within the movement related to the chiliasm of Simon Studion, Julius Sperber, Christoph Besold and Tobias Hess in the late sixteenth century.¹⁹

According to Yates, it was Dee's travels in central Europe in the 1580s which had stimulated the reformist currents that later emerged as the Rosicrucian brotherhood (the Protestant version of the Jesuit order).²⁰ Yates was not altogether accurate in her assessment of Dee's conceptual influences on central Europe, for, not only did cabbalistic, hermeticist and Paracelsian ideas pre-exist Dee's presence in that region, but, moreover, the so-called "Protestant front" itself was deeply riven by the disputes between Lutherans and Calvinists and further complicated by the antagonism of the doctrinaire theologians towards the pietists and theosophists.²¹

In fact, Yates' account of the origins and influence of John Dee on the development of Renaissance science, philosophy and theurgy, has been questioned by various scholars, such as Westman, Vickers and Sherman.

¹⁹ Carlos Gilly (ed), *Cimelia Rhodostaurotica* (Amsterdam: In de Pelikaan, 1988), pp. 63-90. See also Carlos Gilly, "Iter Rosicrucianum" in *Das Erbe des Christian Rosenkreuz* (Amsterdam: In der Pelikaan, 1995), pp. 21, 50-52, 70-72, 138-45.

²⁰ Yates, Frances A., *The Rosicrucian Enlightenment* (London: Routledge and Kegan Paul, 1st printed 1972; reprint 1986), passim.

²¹ Stoeffler, *The Rise of Evangelical Pietism* (1965), pp. 15ff, 109ff, 180-246. See also Will-Erich Peuckert, *Die Grosse Wende* (Hamburg: Claassen and Goverts, 1948), pp. 299-474.

Most especially, historians of the scientific revolution have attempted to disconnect its origins from those of Yates' proto-Rosicrucian circles.²²

Furthermore, Yates' alignment of the Protestant cause with hermeticism was countered by scholars eager to distance Lutheranism from such objectionable associates. In particular, Montgomery, adopting a conservative Lutheran perspective, argued for the negative effects of hermeticism on the reformed Church in Germany. He refuted Yates' interpretation of the Rosicrucians as being the esoteric outpost of the Protestant reformed church, especially removing the theologian Johann Valentin Andreae (1586-1654) from that context. Montgomery, in fact, developed a contrary argument to Yates, considering that neoplatonic and hermetic literature had inspired the educated German elite to devise a paganistic system, decentering Christ from his redemptive role in human salvation.²³ In this line of thinking he concurred with Frick (though from a different ideological standpoint) who had demonstrated the inherited links between Paracelsian theology and pagan hellenistic esotericism. Frick had also emphasised the continuation of medieval chiliasm in Weigel's theology and in that of the Rosicrucians, particularly that of Joachim of Fiore, who in the thirteenth century had predicted the coming of the third age of the creation, that of the Holy Spirit, replacing the second age of the Son in which the institutionalised Church had controlled Christian doctrine. In the third age, Fiore had taught, each person would be guided by the inner word of God written on their soul, instead of by external creeds. This brief period of time would be followed immediately by the end of the world and the last judgement.²⁴

²² An over-view of these debates may be obtained in Stephen Clucas (ed), *John Dee: Inter-disciplinary Approaches* (Dordrecht; London; New York: Kluwer, 1999), especially Gyorgy Szonyi's summary of the arguments in his paper, "Ars Sintrilla, Scrying and the Universal Language. Paracelsian and Other Contexts for John Dee's Angelic Magic". See also Robert S. Westman, "Magical Reform and Astronomical Reform: The Yates Thesis Reconsidered" in Lynn White (ed.), *Hermeticism and the Scientific Revolution* (Los Angeles: UCLA, 1977) and Brian Vickers, "Frances Yates and the Writing of History", *Journal of Modern History*, 51 (1979): 287-316. William H. Sherman discusses these and other views in his *John Dee* (Amherst: Univ of Massachusetts Press, 1995).

²³ John Warwick Montgomery, *Cross and Crucible*, 2 vols (The Hague: Martinus Nijhoff, 1973), 1, pp. 210-11.

²⁴ Karl R. H. Frick, *Die Erleuchteten. Gnostisch-theosophische und alchemistisch-rosenkreuzerische Geheimgesellschaften* (Graz: Akademische Druck, 1973), pp. 112-63. See also Fritz Saxl, "Pagan Sacrifice in the Italian Renaissance", *JWCI* (1938-39): 346-63; Vittoria Perrone Compagni, "La magia cerimoniale del "Picatrix" nel Rinascimento", *Atti dell' Accademia di Scienze Morali e Politiche*, 88 (1977): 279-330. A standard authority on this subject is Aby Warburg, "La Rinascita del Paganesimo Antico" in *Gesammelte Schrifte* (London: Warburg, 1966).

Disregarding Montgomery's denial of Andreae's participation in these movements, Dickson in his recent study of the secret societies of the early seventeenth century has returned to Yates' original contention that the Rosicrucian Manifestos known as the *Fama* (1614) and *Confessio* (1615) emerged from Andreae's circle at the University of Tübingen.²⁵ Andreae's subsequent negativity towards the Rosicrucians in his later years had been cited by Montgomery as proof that he had always been averse to the hermeticists. Dickson, in contrast, favours a different view which is that Andreae was eventually compelled by the need to distinguish between his youthful goals of a socially- and politically-responsible Christian brotherhood and the materialistic drive for power of those who had submitted to the delirium of cabbalism, alchemy and chiliastic prophecy.²⁶

In this aim, Andreae's position was similar to that of Khunrath, since both had been influenced by Weigel, as well as by Arndt. Nonetheless, Khunrath was also finally rejected by Andreae, due to his cabbalistic alchemical terminology which Andreae found absurd. There may, in fact, have been another, more paradoxical, reason for Andreae's animosity towards him, which was that Khunrath could have been in dispute with Tobias Hess. Yates, Gilly and Dickson are in agreement concerning Andreae's earlier connections with hermeticist magi, in particular, with Hess with whom he maintained contact through-out his life. Andreae even justified Hess' probity in the *Mythologiae Christianae* (1619), although in this work he castigated most of the other proto-Rosicrucians.²⁷ Khunrath, on the other hand, for all his cabbalistic paraphernalia, may have conflicted with Hess over the latter's promotion of Studion's chiliastic *Naometria*, a text whose Christian content was slim, leading Khunrath to suspect him of paganistic magical practices.

In view of such evidence concerning disputes between members of hermetic circles in the 1590s to 1620s, a more specific account is required of their ideologies and affiliations. Scholars, for example, have neglected to analyse Khunrath's specific involvement with these esoteric groups, being content to follow uncritically Yates' view of him as one of the most significant influences on the evolution of Rosicrucian ideas,²⁸ despite the fact that Montgomery had denied this. The most valid assessment of

Khunrath's career probably, lies mid-way between these two scholarly assessments. Certainly, after his death, Khunrath's work was co-opted by others into the Rosicrucian canon, but this does not automatically demonstrate his ideological kinship with all of the Rosicrucians. For, although Khunrath in his writings and visual imagery, like other hermeticists, expresses a critical attitude towards scholastic Lutherans, nevertheless, he did not reformulate Lutheran theology into an esoteric sub-species, in the manner of Studion and Hess, for whom Paracelsus and cabbalism seemed to hold as much authority as Christian doctrine. Instead, Khunrath used these esoteric systems to develop a pietistic Lutheranism, based on Weigel, in which the historical figure of Christ and the Lutheran Eucharist were retained both in their conventional doctrinal forms, as well as being used as emblems of individual spiritual experience. Although his interpretation of the sacraments may have ran counter to the dogmatic claims of the Church as the sole administrator of God's grace, nonetheless, he was adopting a relatively mediatory position, like Weigel and Arndt, rather than rejecting the Church altogether.

In the second half of the sixteenth century, alongside the deregulating forces of Philippism and Calvinism which threatened orthodox hegemonies, the esoteric philosophies promoted at the University of Tübingen were an assisting factor. There is no doubt that Agrippa, Paracelsus and the cabbalah offered their followers an increasingly self-determined spiritual and political authority. Hence, Khunrath's writings present a broad picture both of these extremist spiritual factions who found their expression outside the doors of the Lutheran Church, as well as of the pressures on the pietists within its communion exerted by dogmatic Lutherans who condemned as heresy any deviation from institutionalised beliefs. There remains little original documentation on Khunrath which could prove conclusively the exact nature of his political affiliations, but his writings provide strong evidence that he was engaged in a two-pronged resistance, against both the paganistic theurgists and the scholastic Churchmen, thereby opening himself to attacks on all fronts.

When the Rosicrucian movement emerged publically in 1614 and 1615, Khunrath's alchemy was appropriated into the Rosicrucian canon by some of its most earnest supporters, such as Michelspacher and Fludd, but there is evidence that not all of the Rosicrucians regarded Khunrath so favourably. Moreover, few of the later alchemists related the figure of Christ integrally to their alchemical discourse in the manner of Khunrath, whose writing was aimed primarily at a pietistic, German community, rather than at a general European audience.

The present study will concentrate on the intellectual and spiritual concerns of the 1590s to 1620s, using Khunrath's *Amphiteatrum Sapientiae*

²⁵ Donald R. Dickson, *The Tessera of Antilia* (Leiden: Brill, 1998), pp. 32-36.

²⁶ Dickson, pp. 62-88.

²⁷ Gilly (ed), *Cimelia Rhodostaurotica* (1988), pp. 63-90; Gilly, "Iter Rosicrucianum" (1995), pp. 21, 50-52, 70-72, 138-45.

²⁸ Yates, *Rosicrucian Enlightenment* (1986), pp. 59-69, 91-92, 140-55.

Aeternae (1595; 1609) as a focal-point in analysing the rhetorical practices of Paracelsian theosophists, specifically their use of certain types of visual illustration. Since it is not possible to examine all the major alchemists of the late Renaissance, the discussion will be confined to the cabbalistic metaphysics and optical alchemy of four central figures, those of Dee, Khunrath, Maier and Fludd.

CHAPTER ONE

THE SEMIOTIC STRUCTURES OF RENAISSANCE
ALCHEMICAL IMAGERY

Previous studies of Renaissance alchemical imagery have rarely involved a discussion of its semiotic aspects, yet, without such an analysis it is difficult to establish the exact role of visual illustration within a particular context. In the present case-studies, a variety of analytical tools is used drawn from linguistics, structuralism and post-structuralism, such an eclectic approach being justified in the current state of research. For the immediate objective, the most effective model has proved to be Peirce's taxonomy of three fundamental types of sign, namely, those of symbol, icon and index. In addition, other types of analysis have been sampled, such as Piaget's structuralism, as well as the post-structuralist critiques of Barthes, Foucault and Derrida, although this selection by no means exhausts the possible critical methods for the study of alchemical imagery. Szonyi is one of the very few scholars who, at this time, has provided a structuralist analysis of alchemical illustration in his investigation of mandalic structures in alchemical engravings of the seventeenth century, as well as in his semantic study of John Dee's theurgy.¹

In the case of late sixteenth century imagery involving optical diagrams, perspectival geometry and architectural designs there are some particularly difficult problems of interpretation (frontispiece and figs. 23, 30, 41), for, as Goldberg has demonstrated, the stylistic conflict between naturalism and abstraction in an image produces an ambiguous space.²

Renaissance imagery whose discursive programme inter-relates alchemy to optical theory may have been an attempt to produce a visual metonym, or, in Peirce's terms, an indexical affinity between reality and

¹ Gyorgy Szonyi, "The Powerful Image: Towards a Typology of Occult Symbolism", *European Iconography East and West* (Leiden: Brill, 1996), pp. 250-63. See also Szonyi, "Ars Sintrilla" in Clucas (ed), *John Dee* (1999), passim and his paper, "Architectural Symbolism and Fantasy Landscapes in Alchemical and Occult Discourse: Revelatory Images", *Glasgow Emblem Studies*, 3 (University of Glasgow, 1998), pp. 49-69. Other attempts to analyse alchemical imagery in structuralist terms were Urszula Szulakowska, "Geometry and Optics in Renaissance Alchemical Illustration", *Cauda Pavonis*, n.s. 14, 1 (1995): 1-12 and U. Szulakowska, "Two Italian alchemical manuscripts: some philosophical problems: monism and dualism" in Didier Kahn, Sylvain Matton, *Alchimie: art, histoire et mythes* (Paris; Milan, 1995), pp. 249-63.

² Goldberg (1976).

the illusionistic world of the picture. In Peirce's semiotic system, he has distinguished an indexical sign from a "symbol", which has an arbitrary visual appearance unrelated to its conceptual content and, therefore, can only convey a meaning within a specific context for a particular interpretant.³ Peirce also differentiated an indexical sign from an "icon" which, he stated, "would possess the character which renders it significant, even though its object had no existence".⁴ According to this definition, it would initially appear that most alchemical visual signs should be termed "iconic", since they signify irrational concepts such as the "union of opposites", for example, of fire with water. While this identification may be correct in the case of pre-Renaissance alchemical visual signs which are not particularly "realistic" in their style of drawing (figs. 9, 10), this is not applicable to alchemical illustration from the late sixteenth century onwards when an irrational idea may be represented by naturalistic human figures, as in examples from Maier's *Atalanta Fugiens* (figs. 40, 41). In this case, the realistic aesthetic of the Renaissance artist has started to transform an iconic signifier into an index. This issue has never been remarked by the few iconologists who have studied alchemical imagery, nonetheless, it is extremely important since stylistic differences in the appearance of any visual sign change both its meaning and function. In fact, Peirce devised a taxonomy of hybrid signs to describe the vacillations of such unstable signifiatory orders.

Following his general approach, the present author would make only one proposition which is that many late Renaissance alchemical signs incline towards the indexical mode. In other words, alchemical visual semiosis from the late sixteenth century is deliberately "contaminated" not, as Jung believed, by the collective unconscious of a society,⁵ but by the viewer's imminent physical reality. Thus, the alchemical imagery under present consideration does not merely copy, it also restructures the physical world by forcing a continuum between the viewer's space and that of the picture.

Peirce defined the index as

A sign, or representation, which refers to its object not so much because of any similarity or analogy with it, nor because it is associated with general characters which that object happens to possess, as because it is in dynamical

³ Peirce, 2, pp. 170, 172-73.

⁴ Peirce, 2, p. 170.

⁵ Carl Gustav Jung, *Psychology and Alchemy* (London: Routledge and Kegan Paul, 1993), pp. 26, 112, 152ff, 158, 196.

(including spatial) connection both with the individual object ... and with the senses or memory of the person for whom it serves as a sign.⁶

Thus, an index is not a simulacrum "more real than real", for it is intended to be an uninterrupted continuation of the real, a deliberately composed ambiguity concealing the distinction between reality and artifice.

Another unsatisfactory aspect of current alchemical research is that scholars use the same type of analysis for both visual imagery and written text,⁷ with more historical research being directed at the literary texts, in preference to the visual imagery. Perhaps it would yield more profitable results to regard visual and verbal signs as autonomous dialects of the same language, thus requiring different critical approaches. It was Panofsky who first argued for a new type of analytical tool for the study of visual imagery which would be distinct from that of literary scholarship.⁸ His iconological method involved an examination of the historical context in which a visual sign had appeared, for it was this which had determined the style of its depiction. As Szonyi has demonstrated in his study of Agrippa's and Dee's esoteric emblems, Panofsky's method is one of the few able to accommodate the complexity of a visual signing-system. Szonyi also continues to favour the historiographical approach of Gombrich, which has the added advantage of taking into account the psychological effects of the rhetoric deployed by a visual sign.⁹

From a semiotic point of view, the visual sign operates as a "field", whereby it delivers all of its information to the interpretant synchronically. Hence, it requires a broader range of semiotic strategies to correlate the various paradigmatic levels of meaning. The written text, in contrast, is deciphered by the reader in a diachronic sequence and, hence, it is far more dictatorial towards its interpretant than the visual artefact. Consequently, alchemical illustrators, like other Renaissance artists, capitalised on the fact that the synchronic reading of a visual text caused ambiguities to arise in the reception of its meaning. An additional semiotic difference between visual and literary texts is that visual imagery may be symbolic, iconic or indexical, but most literary texts can only be symbolic. It is rare, in fact, to encounter a linguistic metonymic or indexical structure, although the compilers of Renaissance grimoires struggled to produce such signs, on the model of the Hebrew alphabet, as an essential part of their

⁶ Peirce, 2, p. 170.

⁷ For example, Allison Coudert, *Alchemy: the philosopher's stone* (London: Wildwood House, 1980). Otherwise, this is an authoritative general study.

⁸ Erwin Panofsky, *Studies in Iconology* (New York: Harper, 1962).

⁹ Szonyi (1996), pp. 250-53.

magical rituals.¹⁰ These experiments with cryptography yielded few convincing results, since the linguistic signs of European languages are arbitrary phonetic symbols and, hence, cannot mirror their conceptual representant in the manner of visual signs. Consequently, it is essential that scholars of alchemical imagery distinguish between the literary and the visual components of an alchemical treatise. Moreover, certain types of alchemical illustration are capable of functioning almost entirely as a visual text, that is, as metonymic, or indexical, structures, as in the case of one of Khunrath's illustrations (frontispiece). In such metonymic visual images there is an implied physical continuity between the world of the viewer and that of the picture. In these instances, the reception of the picture's message does not need to be deferred until it can be decoded in a linguistic form. In such sophisticated metonymic-indexical images the visual structure is the essence of the meaning communicated to the viewer. This indexical quality of an image is not necessarily dependent on the artist's use of naturalistic motifs (as Peirce had pointed out), since diagrammatic structures may also be indexical. It is more a question of the practical function of a specific visual image. Hence, pseudo-Lullian diagrams, as mobile computers, are indexical (figs. 4-7), whereas Pantheus' static, neo-Lullian structure is merely symbolic (fig. 8).

In this sense, John Dee's mobile cypher of the Monas is the epitome of the visual index (figs. 17, 18), perhaps influencing Khunrath's artist, Jan Vredeman de Vries, to create a more complex version of its metonymic structure (frontispiece). Some of Fludd's cosmological depictions also have indexical qualities, although his illustrations are difficult to categorise, since an image may involve several different types of semiotic mode (figs. 44-50). At first glance, Fludd's diagrams appear to be symbolic (merely illustrating his text), but, in fact, they also have an iconic aspect, since they can be isolated from their textual context while retaining most of their meaning. In addition, as indexical generators of a contemplative type of alchemy, some of Fludd's pictures were meant to integrate the viewer into their imaginary world, causing a spiritual and intellectual alchemy to occur in the moment of viewing the image (fig. 50).

There was a similar intention underlying many other seventeenth century alchemical illustrations, whose ever-increasing complexity of structure was designed for lengthy perusal, eventually eliminating the physical

¹⁰ Stephen Clucas, "Non est legendum sed inspicendum solum": Inspectival knowledge and the visual logic of John Dee's *Liber Mysteriorum*, *Glasgow Emblem Studies*, 3 (1998), pp. 109-32. See also Szonyi "Ars Sintrilla" (1999), passim. For a related issue see Gyorgy Szonyi, "O Worke Divine": The Iconography and Intellectual Background of Alma's House in *The Faerie Queene*, *Shakespeare and the Emblem* (Szeged, 1984), pp. 353-94.

aspects of alchemy altogether. Michelspacher's *Cabala* (Augsburg, 1615-1616) is one of the earliest of these imaginative alchemies, luring the viewer through the glass of his four fiery and jewel-like "mirrors" into the higher intellectual and spiritual realms of the alchemical discourse (fig. 23). When the viewer emerged from the trance-like state induced by participation in Michelspacher's visions, he was (perhaps) transformed, like base matter, into spiritual gold. Effectively, alchemical illustration in the seventeenth century was usurping the transmutatory function of the philosopher's stone. The sophisticated graphic repertoire of Renaissance artists enabled them to manipulate the semantics of their pictorial elements, producing imagery which could induce meditative, or visionary, states in their viewers, uniting them with the depicted visions.

At least, this seems to have been the general aim. From this point of view, most late Renaissance alchemical illustrations could be interpreted as being indexical in their intention. The origins of this persuasive illustrative enterprise can be found in the late fourteenth century, as will be discussed in the next chapter, but the immediate inspiration for the seventeenth century artist would have been the engravings made for Khunrath's *Amphiteatrum* in 1595 and 1602 (figs. 29-35). These may have been circulated publically in isolation from the treatise itself (although the images do incorporate their own texts). Apart from their iconic function as polemical discourses, they could also have been used for contemplative exercises. In the first version of the *Amphiteatrum* of 1595, the circular form of the engravings may signify that they are intended to be "mirrors", evoking a meditative state of mind. It seems probable that de Vries' engraving (frontispiece) was even meant to be reflected in a glass-mirror and examined by the viewer primarily in this reflection. The mental state produced by extended contemplation of such an image would be similar to that of the trance induced by the magical practice of "scrying", or looking into the astral realms with the aid of mirrors and crystals, as in John Dee's scances with Edward Kelley.¹²

It is not coincidental that the philosophical context of these very elaborate, late Renaissance illustrations is that of Paracelsian theosophy. They began to appear soon after the publication of Paracelsus' collected writings in 1589-90 in the editions of Peter Barna in Basel and in those of John Huser in Cologne (1589-91; 1603; 1605). The first Paracelsian illustrative cycle was produced by Khunrath between 1595 and 1602 and the next, in order of production, may have been Fludd's cosmological diagrams, since he claimed to have written most of his "Macrocosm" before

¹² See Szonyi, "Ars Sintrilla" (1999), passim, and Clucas, "Non est legendum" (1998), passim, for accounts of Dee's theurgic practices.

1598 and his rich series of illustrations may also have been designed at the same time.¹³ The proto-type for these Paracelsian indexical images was John Dee's *Monas Hieroglyphica*, which appears to be considerably simpler in its form than Khunrath's, or Fludd's, pictorial devices. Nevertheless, it was even more complex in the manner of its operation. Dee stated that his *Monas* had been devised in circa 1558, for it is discussed in Aphorism LXXVII of the *Propaedeumata Aphoristica* and its image certainly appears on the title-page of that treatise. The *Monas* may be a pre-Paracelsian conceptual construct, since it has not been established by scholars that Dee was interested in occultist ideas prior to the 1560s,¹⁴ although there are traces of Paracelsian pyromancy and cabbalism in the *Propaedeumata Aphoristica*.

Illustrated sequences of alchemical imagery had first appeared in the late fourteenth century, taking an increasingly sophisticated graphic form towards the end of the fifteenth. The most beautiful cycle of pictures is that of the early sixteenth century *Splendor Solis* by Salomon Trismosin in Venice. Nonetheless, the Paracelsian illustrative cycles of the late sixteenth and early seventeenth centuries were substantially different from the earlier examples in both composition and conceptual content. The most obvious contrast is the developed graphic repertoire of the late sixteenth century with its heightened degree of naturalism. In addition, the increased sensitivity of the late Renaissance artist to the topography of the picture-plane enabled him to weave together naturalistic and geometrical elements into a visually and conceptually coherent field. Michelspacher's artist, for example, splits the two-dimensional surface of the picture-plane into layers of realistic and abstract form, uniting them by means of perspectival geometry. This meant that the picture could be read simultaneously at both the representational and the abstract level, as if the viewer was being presented with a vision of the numinous Being implicated within the gross fabric of the natural world. In the Paracelsian context of Khunrath's and Fludd's alchemical imagery, this compositional structure expressed the essence of their theosophy in which the physical world was the emanation of the celestial spheres.

The second major difference between early and late sixteenth century alchemical illustrations was that the later imagery could stand independently of the text of the treatise, as seems to have been the case with Khunrath's pictures. In other words, imagery of this type was able to

¹³ William H. Huffman, *Robert Fludd and the End of the Renaissance* (London: Routledge, 1988), pp. 12-35.

¹⁴ Julian Roberts and Andrew G. Watson, *John Dee's Library Catalogue* (London: Bibliographical Society, 1990), p. 42.

communicate in either an iconic, or an indexical, form. In both Khunrath's and Fludd's pictures, however, there was some textual content within the image, helping it to stand freely from the rest of the book. On the other hand, other Paracelsian imagery often has little, or no text, such as Michelspacher's engravings in his *Cabala*. Whether they contained literary signifiers or not, Paracelsian alchemical engravings were intended to be theosophies, that is, they were meant to promote prolonged contemplation leading to "gnosis", a wisdom inspired by the heavens. The pictures are dense and involved in their iconographical programmes since they are designed to hold the viewer's attention for a prolonged period of time. Earlier alchemical imagery, even that of Salomon Trismosin, is basically a short-hand symbolic system, illustrating, abbreviating and decorating the accompanying text. It is designed to clarify and to deliver information as quickly (and pleasurably) as possible.

Paracelsus had awarded the human imagination a structural role in his theurgy and, thereby, in his cosmology. He had taught that the human-being, as a mirror of the cosmic order, had two bodies, one of which was physical and the other astral. He considered that the imagination was a faculty of the astral body whose function was related to intellectual and spiritual cognition. It was only due to the existence of the celestial spheres within the human body as its innate "astra" that the human-being could understand the stars. Moreover, since the stars generated all earthly phenomena, therefore, through the "astra" it was possible for humans to comprehend all phenomena, both natural and supernatural. Paracelsus conceived of human intelligence as merging with its object of study, so that it gained knowledge, not by rational logic, but through an empathetic union with the world, that is, through "gnosis".

According to Pagel, the Paracelsian universe was a monistic construct in which the world and the human-being formed a single identity. Paracelsus had drawn some of his ideas from the neoplatonic and cabbalistic myth of "Anthropos", the primeval cosmic being who was both the exemplar and the constituent material of the physical universe. This cabbalistic idea had originated in the neoplatonic concept of the demi-urge, or "Anthropos", out of whose macrocosmic body the lesser material world was made, remaining dependent on the stellar "arcana" (astral virtues) in the celestial sphere.¹⁵

¹⁵ Walter Pagel, "Paracelsus als 'Naturmystiker'" in Antoine Faivre and Rolf Christian Zimmermann (eds), *Epochen der Naturmystik* (Berlin: Erich Schmidt, 1979), pp. 57-58, 61, 70, 89-99. The theological works of Paracelsus are found in Karl Sudhoff and Wilhelm Matthiesen (eds) *Paracelsus. Samtliche Werke. Part II* (Munich: O.W. Barth, 1923), 1, pp. 89-110, *De religione perpetua* and pp. 111-32, *De summo et aeterno bono*.

By means of the imaginative faculty residing in a human's astral body (the "supercoelestis corpus"), an empathetic union could be attained with cosmic Anthropos, a state of being which provided humans with true wisdom. Paracelsus found no contradiction between his concept of a knowledge intuited with the aid of the heavens and his parallel assertion that it was necessary to undertake an empirical investigation of natural phenomena in "das Licht der Natur". Modernist science would find a degree of conflict between these two modes of gaining knowledge, those of revelation and empirical deduction. Pagel, however, has defended the integrity of Paracelsus' theoretical programme, arguing that in the Paracelsian system the outward manifestations of the light of nature were reflected in the light of human understanding. Paracelsus believed the same celestial light illuminated, created and sustained nature, as well as the human-being at the core of his being.¹⁶ The concept of the "light of nature" is one of the foundations of Khunrath's alchemy in which he describes an unbroken continuum of illuminated wisdom, incorporating both the practical experience of the natural world, as well as the spiritual vision of the mystic.¹⁷

In Paracelsian theosophy, empathetic imagination was not a subjective and, therefore, negligible factor in human affairs, but a powerful astral force which provided the basis for theurgy and prognostication, as well as for prophecy and mystical inspiration. Consequently, the Paracelsian theosophical system eliminated, or diminished, the role of the institutionalised Christian church as the interpreter of God's will by means of the canonical scriptures. Replacing external authority, the individual intuition became a more immediate and truer guide to divine knowledge. Even more radically, Paracelsus stated that through the imaginative faculties of the astral body a human could attain beatific union with God.¹⁸ The influence of Paracelsian theosophy on German pietists such as Valentin Weigel and Johannes Arndt¹⁹ and their subsequent effects on alchemical ideas will be discussed in a later chapter.

In the immediate context, it is evident that Paracelsus' concept of the role of the imagination in both magical and spiritual practices would encourage the use of visual imagery. For example, Khunrath's "amphi-

¹⁶ Pagel, "Paracelsus als 'Naturmystiker'" (1979), pp. 59-60. For a different interpretation of Paracelsus' two kinds of knowledge, as interpreted by Valentin Weigel, see Peuckert, *Pansophie* (1956), 2, pp. 295-300.

¹⁷ For example in Heinrich Khunrath, *Chaos* (Magdeburg: Johann Schemidt, 1616), p. 68.

¹⁸ Pagel, "Paracelsus als 'Naturmystiker'" (1979), pp. 60-62, 70-74.

¹⁹ See Frick, *Die Erleuchteten. Gnostische-theosophische und alchemistisch-rosenkeuzerische Geheimgesellschaften* (1973), pp. 112-63.

theatre" of 1595 and 1609 provides a public spectacle for an audience, displaying the actions of Eternal Wisdom on the physical chemistry of the manifested creation. In Paracelsian terms, Khunrath shows how the physical world is united to the divine principle by means of the "quintessence" or "azoth". The Paracelsian "azoth" was a concept adopted from the late medieval theory of the "coelum", a medium between matter and soul, world and God, in other words an "astral" substance, both physical and spiritual in nature. Therefore, it had exactly the same character and the same function as the human imagination in the astral body. Paracelsus had, in fact, stated that the imagination was the "coelum in homine".²⁰ Hence, in Paracelsian chemical theosophy the "quintessence" was not only a chemical substance, but also a psychic faculty that of the imagination or fantasy.

Khunrath reiterates precisely the same theosophical concepts in his writings from 1595,²¹ providing not only instructions for practical and spiritual chemistry, but also, in the *Amphiteatrum*, giving "tangible" demonstrations of the astral and spiritual faculties. His engravings are intended to excite the imagination of the viewer so that a mystic alchemy can take place through the act of visual contemplation. Khunrath's "amphiteatrum" is a "spectaculum", a word related linguistically to that of "speculum", a secondary meaning which the reader was undoubtedly intended to retrieve from the original title of the treatise. Hence, Khunrath's theatre of images, like a mirror, catoptrically reflects the celestial spheres to the human mind, awakening the empathetic faculty of the human spirit which unites, through the imagination, with the heavenly realms. Thus, the visual imagery of Khunrath's treatises has become the alchemical quintessence, the spiritualised matter of the philosopher's stone, transmuting both the human soul and the physical world into gold.

It is evident that late Renaissance alchemists were involved in a radical semiotic enterprise, intuiting the possibility of devising a visual signing-system which would resolve the dualistic conflict of the European linguistic sign in which signifier and signified were arbitrarily related.²² Accordingly, John Dee regarded his *Monas Hieroglyphica* as a graphic system which was also practical chemistry (figs. 17, 18), a metonymic continuum of physical and conceptual alchemy.

²⁰ Pagel, "Paracelsus als 'Naturmystiker'" in *Epochen der Naturmystik* (1979), pp. 60-62, 91-92.

²¹ For example, see Heinrich Khunrath, *Chaos* (Magdeburg: J. Schmeidt for Johann Francken, 1616), pp. 68-72.

²² Refer to Szonyi, "Ars Scintrilla" (1999), passim, and his paper forthcoming in *Renaissance Quarterly* for a discussion of the theurgic linguistics of Ficino, Agrippa and Paracelsus.

Alchemy has always been a type of "gnosis", a non-rational esoteric philosophy, fully explicable only by its initiates. Fundamentally an oral system of knowledge, the epistemic changes in alchemical theory cannot be recovered in their entirety by contemporary historians, even from the considerable amount of physical evidence available to them. Problems of interpretation are exacerbated by the fact that there are few immutable meanings for the various symbols since they have become amplified in the course of their historical use. In Barthes' terms, they should be considered as "mythic" secondary-level signifiers, each alchemical sign bearing with it the history of its use. Thus, although dictionaries of alchemical terms, such as Dom Pernety's, are numerous, they have more value as historical artefacts in their own right, rather than as aids to the contemporary historian.²³ The absence of the objective markers provided by oral witness has occasionally produced strange results in contemporary alchemical research in which scholars may find themselves producing a parallel alchemical treatise to the original text, rather than an empirical commentary on it. This happened in the case of Jung who produced a new school of alchemy, which was as much a continuation of the Paracelsian theosophical tradition, as a critique of it.²⁴

In the psychological approach of the Jungians and Freudians, alchemy is presented as a "perennis philosophia" of symbolic archetypes and ideas repressed by the rational mind. The misconception in these psychological studies is that it is possible to "explain" alchemy while disregarding the epistemology of a particular concept. A more cautious iconographic approach may yield, at least, a partially verifiable rationale for the historical development of alchemical theory. For example, studies such as those of Barbara Obrist and Pamela Smith have demonstrated that alchemy is not a transhistorical myth, but a construct which is culturally produced.²⁵ Obrist's research is of particular importance to the present argument since she has explained the reasons for the appearance of elaborate cycles of visual illustration in the late fourteenth century.

It is debatable whether "alchemy" is an ageless "prisca theologia", although important elements have remained constant through-out its two thousand years of history. Perhaps it is more useful to view alchemy as an

evolving language, which is both a self-contained structure, yet which changes according to the dictates of its own chronological period. In Piaget's definition, a "structure" has an innate organic integrity and coherence, with a set of intrinsic laws self-regulating its dynamic transformations.²⁶ The present study aims to demonstrate the operation of some of the geometric and optical signifiers which facilitated communication between the Renaissance alchemist and his audience.

²⁶ Jean Piaget, *Structuralism* (London: Routledge and Kegan Paul, 1971), pp. 5-16.

²³ Dom Pernety, *Dictionnaire mytho-hermetique* (Paris, 1787; Paris, 1972).

²⁴ For an example of a Freudian alchemical treatise see Johannes Fabricius, *Alchemy* (Copenhagen: Rosenkilde and Bagger, 1976).

²⁵ Barbara Obrist, *Les Debuts de l'Imagerie Alchimique (XIVe-XVe siecles)* (Paris: Le Sycomore, 1982). A similar study on the political context of alchemy is Pamela H. Smith, *The Business of Alchemy* (Princeton UP, 1994).

CHAPTER TWO
GEOMETRY AND ASTROLOGY IN LATE MEDIEVAL
AND EARLY RENAISSANCE ALCHEMY

Alchemical geometry in the Renaissance can be described as passive or operative, either using geometrical structures to organise information into tabulations, circular formats or tree-like structures,¹ or, as in the case of pseudo-Lullian alchemy, employing a mobile computational system.² Another, more complex, type of alchemical geometry emerged in the late sixteenth century, based on optical and perspectival diagrams which inter-related Pythagorean geometry, optical science, Paracelsian alchemy and cabbalism.

By the fifteenth century, European alchemists had several goals, namely, chemical work on matter to remove its impurities, spiritual work to redeem their own souls and, finally, a practical medical purpose.³ From the late fourteenth century they were also attempting to develop a visual signing-system which could express paradox, specifically the concept of the union of opposites. Their semiotic quest was based on a pantheistic intuition which had accompanied alchemy from its origins in late hellenistic culture. The pagan alchemists had believed that matter was pervaded by spirit since the world was God's emanation in a perpetual cycle of creation, dissolution and re-creation. Matter and spirit, thus, formed one essential identity.

In the fourteenth century, Arnald of Villanova and John of Rupescissa had also introduced a new medical purpose into the traditional alchemical theories of transmutation. Subsequently, alchemists sought not only to create the philosopher's stone, they also ventured on another, equally urgent, quest which was to produce the "universal panacea", said to be composed of the "quintessence" which had been described by Aristotle as a mean between matter and spirit out of which the heavenly spheres were formed. The introduction of a medical purpose into alchemy also neces-

¹ Szulakowska, "Geometry and Optics in Renaissance Alchemical Illustration" (1995): 1-12

² Urszula Szulakowska, "Material Pantheism in the Pseudo-Lullian "S"-Circle of the Powers of the Soul", *Ambix*, 35 (1988): 127-54.

³ Coudert, pp. 14-35; F. Sherwood-Taylor, *The Alchemists* (St. Albans: Paladin, 1976), pp. 15-23; G. F. Hartlaub, *Der Stein der Weisen* (Munich, 1959), passim.

sitated a more refined use of astrological data in order to correlate the laboratory work with the influences of the stars.

On the model, thus, of the circulating heavens governing the seasons of nature, the alchemical process was conceptualised as being a circular process. Pagan alchemists of the Christian era, such as Zosimos, subscribed to gnostic and hermetic beliefs that the human soul could rise to a higher level through meditative practices and esoteric rituals. The alchemists transposed this mystical idea into chemistry whereby, in the course of refining his materials, the operator simultaneously purified his own being and united with God.⁴ A related Orphic and Pythagorean concept was that of the soul's reincarnation and immortality.⁵ In a similar manner, alchemists conceptualised matter as being reborn during the chemical work in a higher incarnation of its former corrupted self. Hence, the hellenistic alchemists adopted the gnostic symbol of the Ouroboros, a snake holding its tail in its mouth to represent the infinite circle of time.⁶ By the late hellenistic period, alchemy was conceived as being a circular process which began with perfection (the origins of matter in God) and ended in perfection (the spiritualised matter produced by the alchemist). Hence, the geometric form of the circle was the fundamental signifier of alchemy.

Another basic tenet of hellenistic hermeticism and alchemy in the first Christian centuries was that of the unity and dynamic interaction between God and human, spirit and matter, heaven and earth, body and soul.⁷ It was believed that God enacted his will on the earth through the agency of the stellar spheres and planets.⁸ In alchemy the inter-relationship of spirit and matter was represented by the marriage of the Sun and the Moon (spirit with matter), whose offspring was the philosopher's

⁴ H. J. Sheppard, "The Redemption Theme and Hellenistic Alchemy", *Ambix*, 8 (1960): 98-110 and also H. J. Sheppard, "Gnosticism and Alchemy", *Ambix*, 6 (1957-58): 140-48. For a different view of the role of gnosis in hellenistic alchemy see Frick, *Die Erleuchteten* (1973), pp. 77-80.

⁵ This issue is discussed in Urszula Szulakowska, "The Pseudo-Lullian Origins of George Ripley's Maps and Routes", *Cosmos*, 9 (1993): 107-26. See also Daniel Pickering Walker, "Eternity and the After-Life", *JWCI* (1964): 241-50.

⁶ H. J. Sheppard, "The Ouroboros and the Unity of Matter in Alchemy", *Ambix*, 10 (1962): 83 ff; Frick, *Die Erleuchteten* (1973), pp. 9-26.

⁷ Marcelin P. E. Berthelot, *Introduction à l'Étude de la Chimie des Anciens et de Moyen Âge* (Paris, 1889), passim; M. P. E. Berthelot, *Les Origines de l'Alchimie* (Paris, 1885), passim. Frick provides a succinct discussion of the alchemy of the late hellenistic period and its influence on the Arabs in *Die Erleuchteten* (1973), pp. 67-88.

⁸ Andre Jean Festugiere, *La Révélation d'Hermès Trismégiste*, 1, *L'Astrologie et les Sciences Occultes* (Paris, 1944; Paris, 1950) and vol 2, *Le Dieu Cosmique* (Paris, 1949).

stone of the medieval alchemists. Its essential form was the perfect circle, insusceptible to the corrupting effects of natural transmutation.⁹

Astrology was an essential component of alchemical practice since alchemy, as a mirror of nature, was similarly affected by stellar influences. The medieval Jewish cabbalistic text, the *Zohar*, also stressed the necessity of watching the activity of the heavens in order to understand the course of human affairs.¹⁰ The medieval alchemists, especially the pseudo-Lullians of the fifteenth century, emphasised the need to correlate their chemical work with the motions of the planets and the signs of the Zodiac.¹¹ By the early sixteenth century, Paracelsus was teaching that the efficacy of alchemical medications was totally dependent on their concordance with the healing virtues emanating from the stars.¹²

The inter-dependency and unity between macrocosm and microcosm had been summarised in the late Alexandrian text of the *Emerald Table* attributed to Hermes Trismegistus (circa second century AD) which became the iconic statement of the alchemists, "That which is above is like to that which is below". The subject of this verse is an unidentified entity, stated to be the child of the moon, which is carried in the womb of the wind. It rises to the heavens above and sinks down again to the earth, repeatedly.¹³ The *Emerald Table* became an appropriate description of the alchemical process with the subsequent invention of the chemical still. Zosimos had discovered distillation in circa 300 AD, but it was the Arabs

⁹ Joachim Telle, *Sol und Luna* (Hurtgenwald: Guido Pressler, 1980), pp. 55-64.

¹⁰ Sherwood-Taylor (1976), pp. 21-22, 51-54. Also see Aby Warburg, *Orientalisierende Astrologie* (Leipzig, 1927). For astrology in cabbalism see Fischel Lachower and Isaiah Tisby (eds), *The Wisdom of the Zohar*, 2 (Oxford U.P., 1989), pp. 662-66 and Frick, *Die Erleuchteten* (1973), pp. 58-66.

¹¹ Sherwood-Taylor (1976), pp. 51-54; Lynn Thorndike, *History of Magic and Experimental Science*, 4 (New York: Columbia U.P., 1953), p. 36. Henceforward, this work will be designated as "M&ES"; Eugenio Garin, *Lo Zodiaco della Vita* (Rome and Bari, 1976); Aby Warburg, *Italienische Kunst und internationale Astrologie* (Rome, 1922), pp. 180-93.

¹² Karl Sudhoff and Wilhelm Matthieson (eds), *Paracelsus. Samtliche Werke*, I, vols. 1-5, 10-14 (Munich; Berlin: R. Oldenbourg, 1928-33), for example, vol. 3, pp. 92-200, *Decem libri Archidoxis* and vol. 12, pp. 1-444, *Astronomia Magna*, as well as vol. 12, pp. 503-5, *Ars signatoria*. Another central Paracelsian text concerning the influence of the stars on a long and healthy life is *De vita longa*, Sudhoff, I, 3, pp. 221-48 (German text), 249-92 (Latin version). The standard authority on the Paracelsian system is Walter Pagel, *Paracelsus* (Basel: Karger, 1982), see pp. 64-71.

¹³ E. J. Holmyard, "The Emerald Table", *Nature* (1923): 525-26; Robert Steele and Dorothea Waley Singer, "The Emerald Table", *Proceedings of the Royal Society of Medicine*, 21 (1928): 41-57. For an account of hellenistic hermeticism and alchemy see Frick, *Die Erleuchteten* (1973), pp. 72-88.

who developed the full procedure in the seventh century.¹⁴ In Arabic and medieval European alchemy, the *Emerald Table* came to be regarded as a metaphor of the circular process of distillation in which the volatile spirits were repeatedly separated by heat from the material dregs and re-united with them. When the spirits were deemed to be sufficiently purified, they were conducted into a separate container, while the materials left in the flask were calcinated and purified, eventually being re-united with the spirits. Hence, the volatile spirits left the dregs of "dead" matter, in the same manner as the human soul left the body at death. So too, they were returned to the matter, just as in Christian belief the soul rejoined the body at the Last Judgement. The process of distillation, thus, symbolised both death and resurrection, as well as the union of macro and micro-cosm.

A pantheistic current, promoting the concept of a union between spirit and matter, entered medieval alchemy from the mystical system of divine numbers invented by Pythagoras. He believed that the original Ideal Numbers existed eternally in the Mind of God who created the world by means of their emanation from the Monad to the Decad. Therefore, mathematical knowledge provided a direct link with God, since the human soul was constituted from pure number. The sacred numbers were the skeletal structure of manifestation and they could be interpreted as taking a corresponding geometrical form: 1 = point: 2 = line: 3 = triangle (plane): 4 = cube (third-dimension). Pythagoras considered that the Ideal Numbers realised themselves in a material form by means of a trinitarian dialectic. In this process, the Monad produced the Dyad, their opposition being resolved in the Ternary which produced the Quaternary, the sequence continuing through the rest of the numbers to the Decad. Pythagoras also developed a system of mathematical ratios to explain the order of creation, obtaining these from a musical model, that of the monochord, which he believed to be generated by the motions of the stellar spheres and planets.¹⁵

Arabian scholars translated many of the late hellenistic neoplatonic, neopythagorean and hermetic treatises and, through Latin translations from the Arabic in the late twelfth century, some ideas were transmitted to the West.¹⁶ In the early medieval period, the Christian philosopher

¹⁴ Robert P. Multhauf, "The significance of distillation", *Bulletin of the History of Medicine* (1956): 439-46.

¹⁵ Peter Gorman, *Pythagoras. A Life* (London: Routledge and Kegan Paul, 1979). A more complex analysis can be found in Michael J. B. Allen, *Plato and Nuptial Arithmetic* (Univ. California, 1994), pp. 44-80.

¹⁶ For a general over-view see Paul Oskar Kristeller, *Renaissance Thought and Its Sources*

Boethius produced an influential doctrine based on Pythagorean geometry and arithmetic which he expounded in his *De Institutione Musica* and *De Institutione Arithmetica*.¹⁷ These works laid the foundation of medieval scholarship and his ideas supplied the parameters for the world-view of the medieval period. Due to Boethius, Pythagorean mathematics, geometry and music were introduced into the medieval universities, becoming the "lingua franca" of European science and art. This mystical ideology was a major constituent of the liberal arts curriculum, lying uneasily alongside Aristotelian natural philosophy.¹⁸

However, it was not until the late fourteenth and early fifteenth centuries that the conceptual influence of Pythagorean geometry could be discerned in an alchemical context. It made its first appearance in a novel type of alchemical imagery in the late fourteenth century, far more complex than earlier hellenistic and Arabic graphic cyphers since the new illustrations involved a whole sequence of pictorial imagery. In addition to figurative and narrative elements, the visual forms also involved geometrical schemes, though they lacked finesse in design and graphic skill. Such crude geometries, accompanying equally rough symbolic figures, are first encountered in the untitled alchemical treatise of Gratheus and in another work by the alchemist Constantinus, *Le livre des secrets de ma dame alchimie*, but in these two treatises the geometrical structures are little more than frames for the figurative imagery.¹⁹

In her investigation of the origins of alchemical illustration, Obrist argued that the function of these visual forms was rhetorical. They were a strategy devised to counter the arguments of the scholastics who concurred with Aristotle in maintaining that a substance could not change species. In the Aristotelian definition, "species" constituted distinct orders which could not interchange their formal qualities. Therefore, since the different metals belonged to different species, lead could not turn into gold. This scholastic argument completely invalidated the whole alchemical enterprise. In response, alchemists produced a rhetorical device, permitting them to ignore such pedestrian objections. They "proved" the truth of alchemy by means of pictures which aimed to confuse reality with its painted simulacrum. In addition, alchemical illustrators appropriated Christian iconography, deliberately conflating alchemical imagery

(New York: Columbia U.P., 1979). A more specific argument is that of Brian P. Copenhaver in David C. Lindberg and Robert R. Westman, *Reappraisals of the Scientific Revolution* (Cambridge UP, 1990), pp. 261-301.

¹⁷ Vincent Foster Hopper, *Medieval Number Symbolism* (New York: Columbia U.P., 1938).

¹⁸ Gordon Leff, *Paris and Oxford Universities in the 13th-C and 14th-C* (New York, 1968).

¹⁹ Obrist, figs. 1, 2, 3, 4, 5, 11.

with the sacred visions of the saints. In this manner, the alchemists moved their theories from the ground of scholastic debate to that of the unquestionable truths of the Christian faith.²⁰

Another major development in alchemical visual imagery took place in the early fifteenth century when a complex geometry intended as a practical device was created by pseudo-Lullian alchemists. These were a group of anonymous writers working under the name of the Catalan mystic Ramon Lull, although he had not accepted the claims of alchemy and had never discussed the subject. Regardless of this fact in the late fourteenth century the first unillustrated text appeared under his name in Catalonia. Transported to Northern Italy, the older texts were translated from the vernacular into Latin and new ones were produced, with the first alchemical Lullian geometries appearing in the 1430s to 1440s (figs. 4-7).²¹ The original Lullian Art (invented in circa 1272) had been designed as a system of logic using visual computational figures.²² The diagrams were intended to be cut from paper and constructed into a mobile calculator, fastened in the middle with string. The pseudo-Lullians, similarly, appropriated the Lullian tabulations which had recorded the computations of the letters of the alphabet and they also employed Lullian tree diagrams. The alphabet performed a symbolic function representing the various objects of discourse, a device which Lull had encountered in the cabalistic alphabets of Abraham Abulafia in thirteenth century Spain.

There are three main ideas in pseudo-Lullian theory, those of circularity, motion and of the medium between opposites, all of which originate in Aristotle's theory of the four elements. In his text *On Coming-to-be and Passing Away* Aristotle had demonstrated that the changing nature of the world was the result of the constant transmutation of the elements into one other.²³ Since each element had two qualities (fire had heat and dryness), therefore, opposites united by moving through their common quality, for example, fire turning into water by passing through the quality of dryness shared with earth and then through the quality of coldness which earth shared with water. In the medieval period, Aristotle's theory was pictured as a square with the elements placed at the four corners, the

opposites being laid out across the diagonals (fig. 3). Around the edges of the square the mutations took place in a circular motion.²⁴

Hence, the symbolic picture of the alchemical process was not only that of a circle, but also that of the squaring of the circle. The same idea is subsequently encountered in George Ripley's *Compound of Alchemy* as well as in Michael Maier's Emblem XLVI in the *Atalanta Fugiens* (fig. 39). Since this geometrical feat cannot be accomplished in Euclidean geometry, therefore, the concept of the squaring of the circle came to signify any process which could be accomplished only by means of divine intervention. In fact, it became a generic sign for the alchemical process itself and Maier produced a treatise based on this idea, *De Circulo Physico, Quadrato* (Oppenheim: Luca Jennis, 1616), which was an account of the role of the sun in the making of potable gold.

In alchemical theory, the squaring of the circle was a monistic concept since it implied that nature (signified by the square of the four elements) was God (signified by the perfect circle). Perhaps unwittingly, the pseudo-Lullian alchemists introduced a material pantheism into their conceptual structures, thereby transgressing Catholic dogma which abhorred any identification of nature with God. Lull himself had encountered the same heresy in the design of his original geometry in the 1270s based on the number four, causing him to produce another model in the 1290s based on a trinitarian structure. Whichever numerology was employed in the Lullian Art, it radically altered the metaphysical universe conceptualised by the system.²⁵

Lull's numerology of three represented the conventional Christian image of the Triune God (Father; Son; Holy Spirit) in his alchemical mirror as soul, matter, spirit, while the numerology based on four represented matter (the four elements). In the *Ars Compendiosa* of the 1270s the first Lullian scheme consisted of a series of diagrams based on the "Figura Animae 'A'", representing the soul. They took the form of a number of concentric circles, around whose circumference Lull placed the names of the dignities of God such as "Magnitudo", or "Bonitas", as established by neoplatonic Christian doctrine (fig. 4). In the middle of each circle there were located four over-lapping squares, signifying the physical elements. God was then allocated sixteen dignities (4 x 4) at the edges of the circle to accord with the inner squares. The conceptual outcome was that God was given the form of matter (fig. 5, pseudo-Lullian version).

²⁰ Obrist, pp. 55-65, 248-49.

²¹ Michela Pereira, *The Alchemical Corpus Attributed to Raymond Lull* (London: Warburg Institute, 1989), pp. 6-8, 12-15, 17-20, 22-28.

²² Frances A. Yates, "The Art of Ramon Lull", *J. W. C. I.* (1954): 115-73; F. A. Yates, "Ramon Lull and John Scotus Erigena", *J. W. C. I.* (1960): 1-44.

²³ Aristotle, *On Coming-to-be and Passing Away* (Oxford: Clarendon, 1922). On pseudo-Lullism see Thorndike, *M&ES*, 4, pp.3-64, esp pp. 34-35.

²⁴ Yates (1954): 149, fig. 2.

²⁵ Erardo-W Platzeck, "Descubrimiento y esencia del Arte del. Bto. Ramon Lull", *Estudios Lulianos*, 8 (1964): 137-54.

It seems probable that in order to conform to Catholic orthodoxy, Lull changed his geometrical system to one corresponding with the Augustinian theory of "exemplarism". In this neoplatonic system nature is a mirror of God and, thus, displays his trinitarian form without being any part of God himself. In his *Ars Inventiva Veritatis* (1289-90), Lull produced a new circular diagram of the "Figura Animae", computed this time by three triangles (3 x 3), with God being awarded nine dignities. This symbolically expressed the nature of God as pure spirit in the three Persons of the Holy Trinity (fig. 6, pseudo-Lullian version).²⁶

The second fundamental figure of the Art was the circle of the "Figura T" which correlated the "Figura A" by means of a set of qualifying categories. It was always provided with triangles in order to perform its computing function (fig. 7). On the inner circles were written the names of various aspects of the subject of investigation and a formulated set of questions addressed the various issues. The over-lapping quadrangles (in the first version of the Art in the 1270s), or triangles (in the second version of the 1290s), computed the answers.

The pseudo-Lullian alchemists were little affected by Lull's theological problems, since they used both of his numerological systems interchangeably, applying whichever geometry best suited their immediate purpose (figs. 5, 6). In fact, pseudo-Lullian alchemy, for all its heretical connotations, flourished above all other types through-out the fifteenth and into the early sixteenth century. Its attraction undoubtedly lay in the possibility of building the diagrams as conceptual play-things. Pseudo-Lullian diagrams appeared to rationalise alchemy, laying-open to human sight a map, or vademecum, of the necessary procedures.

Lullian geometries influenced some of the engravings in Khunrath's *Amphiteatrum Sapientiae Aeternae* (fig. 33), as well as illustrations produced for Oswald Croll, Johann Mylius, Jacob Boehme and other alchemists. Agrippa in his *De Occulta Philosophia* (1533) was an influential force in the further dispersal and development of Lullian ideas in the early sixteenth century²⁷ and in the same years, Pantheus of Venice introduced cabbalism into the Lullian geometry of his *Voarchadumia* (1530). Using complicated Latin alphabetical systems, magical cyphers and cabbalistic Hebrew letters and names, Pantheus made a significant amendment to the basic Lullian "Figura A" by turning it into a static diagram, more like a

²⁶ This issue is discussed at length in Szulakowska (1988): 127-54.

²⁷ Henry Cornelius Agrippa, "in artem brevem Raymundi Lullii Commentaria" in *Opera*, 2 (London, 1600), pp. 449-51. See also Thorndike, *M&ES*, 5, pp. 127-38.

map with four compass points, than a computational device (fig. 8).²⁸ John Dee obtained a large number of Lullian and pseudo-Lullian treatises, as well as the *Voarchadumia*, but he rejected this system in favour of cabbalism and catoptrics for his own *Monas Hieroglyphica*,²⁹ although, according to Clucas, Dee employed Lullian geometry for his angelic magic.³⁰ Dee's alchemical collaborator, Edward Kelley, was strongly influenced by the pseudo-Lullians and by their English follower, George Ripley, whose works also appear in Dee's library.³¹

In the late fifteenth century George Ripley, canon of Bridlington (active 1450 to 1490) introduced pseudo-Lullian alchemy into England, dispersing these ideas through his *Cantilena (De lapide philosophorum, seu de phoenice)*.³² In his later treatise, the *Duodecim Portae* (first published in England as *The Compound of Alchemy* in 1591), Ripley devised an alchemical topography which translated the original Lullian computational circles into a geographical map. He described a castle with twelve doors which had to be negotiated by a circular sea-voyage. Both the castle and the circular journey represented the pseudo-Lullian alchemical circles. Ripley speaks of "turning the wheel" to take a course into the four corners of the earth, visualising the alchemist as a helmsman on a ship and the alchemical process as an expedition across the oceans. His "wheel" signified the Aristotelian square of the four elements (fig. 3).³³ Ripley obtained his idea of the rotation of the elements from the pseudo-Lullians, making statements such as,

But fyrst of these Elements make thou Rotacyon,
And into Water thy Erth turne fyrst of all;³⁴

²⁸ Joannes Pantheus, "Ars et Theoria", *Theatrum Chemicum*, (Strassburg: Zetzner, 1659/61), pp. 459-549, fig. p. 460. Also Clulee, pp. 101-3.

²⁹ Roberts and Watson, *John Dee's Library Catalogue* (1990), for Lull and ps. Lull see 1401-1424, 2278-2281, B217, B241, B224, DM8, M16, M23, M46, M66; Pantheus 1437, D16.

³⁰ Clucas (1998), pp. 109-32.

³¹ Elias Ashmole, "Sir Edward Kelley to G. S. Gent." in *Theatrum Chemicum Britannicum* (London, 1652; New York and London, 1967), pp. 324-33. Other texts were translated into English by Arthur E. Waite in *The Alchemical Writings of Edward Kelly* (London, 1893). For Dee's Ripleyan collection see Roberts and Watson, for example, DM4, DM6, DM91.

³² N. L. Brann, "George Ripley and the Abbot Trithemius", *Ambix*, 26 (1979), 212-19; Stanton J. Linden, "The Ripley Scrolls and The Compound of Alchemy", *Glasgow Emblem Studies*, 3 (1998), pp. 73-94. Professor Linden is currently preparing a critical edition of the *Compound of Alchemy*.

³³ Szulakowska (1993).

³⁴ Ashmole, p. 133.

... Altytude, Latytude, and Profundyte,
By whych algates turne we must our Whele;
Knowing thy entraunce in the West shall be;
Thy passage forth into the North yf thou do well³⁵

On the model of Ripley's *Duodecim Portae* Michael Maier described similar alchemical voyages around a Lullian alchemical circle in the *Cantilenae Intellectuales* (1617), *Viatorium* (1618) and *Tripus Aureus* (1618).³⁶

Ripley's probable disciple Thomas Norton was similarly influenced by pseudo-Lullian alchemy,³⁷ producing one of the most important Renaissance alchemical treatises, *The Ordinal of Alchemy* (begun in 1477).³⁸ Dee transcribed a copy of this text in his own hand in 1577 and had it bound in purple velvet (Bodleian Library MS Ashmole 57).³⁹ According to Ashmole, Maier came to England in 1611 specifically to learn English, so that he could translate Norton's treatise into Latin for his compendium of alchemical texts, the *Tripus Aureus* (Frankfurt, 1618).⁴⁰ Norton also referred to the importance of geometry in his alchemical theory, but he developed this idea much further than either the pseudo-Lullians or Ripley. In fact, although Norton's *Ordinal* is related conceptually to the work of Ripley, it is very different in tone and structure from any of Ripley's texts. Norton carries the authority of a learned university scholar and his alchemical claims are supported by discursive comments which evidence a much wider philosophical background. He was not the first English alchemist to advocate the use of geometry in alchemy since in the thirteenth century Roger Bacon in his *Mirror of Alchemy* had noted the applicability of geometry and mathematics to alchemy.⁴¹ Norton, however, was the first to recommend taking recourse to all seven liberal arts. In this his direct influence was Boethius and he mentions Pythagorean musicology, specifically the tonal structures of the "dyapason", "diapente" and "diatesseron". Most important in the context of the present study, Norton advised the alchemist to use "science perspectyfe".

³⁵ Ashmole, p. 137.

³⁶ Szulakowska (1993).

³⁷ See Gareth Roberts, *The Mirror of Alchemy* (London: British Library, 1994), pp. 41-42.

³⁸ John Reidy, *Thomas Norton. The Ordinal of Alchemy* (Oxford U. P., 1975).

³⁹ This is R&W: DM96.

⁴⁰ Ron Heisler, "Michael Maier and England", *The Hermetic Journal* (1989): 119-25.

⁴¹ Stanton J. Linden (ed), *The Mirror of Alchemy Composed by the Thrice-Famous and Learned Fryer Roger Bacon* (New York: Garland, 1992), p. 30: "first learne geometry, and her measures, that so he may rightly frame his furnaces, not passing a meane, either by excess or defect: and withall, he must know the quantitie of his fire".

when Boicius seid: Tu numeris elementa ligas.
Ioyne your elementis Musicallye,
For ij causis: one is for melodye
whiche theire accordis wil make to your mynde
The trewe effecte when that ye shalle fynde;
And al-so for like Dyapason,
with diapente & with diatesseron,
with ypate ypaton & lekanos Muse(d),
with accordis which in musike de (used),
with theire proporcions cawsen Armonye,
Much like proporcions be in Alchymye ...
With astrologie ioyne Elementis also,
To fortune theire worchingis as thei go; ...
And science perspectyfe geuith grete euydence
To al the mynysters of this science;

(British Library MS Add. 10, 302)⁴²

Norton also emphasised the importance of astrology in alchemical work. A copy of his *Ordinal* in British Library MS 10. 302 (circa 1490) includes a diagram of astrological calculations (f. 67v).

In the late fourteenth century another important theoretical interrelation between astrology and alchemy was developed in the work of John of Rupescissa. In his *De consideratione quinte essentie* (circa 1370) Rupescissa described the properties of an elixir of life, a "fiery water" which he called the "coelum", or quintessence, a union of two antagonistic principles. He adapted Aristotelian physical theory to a medical purpose, regarding his "coelum" as being the universal panacea. While modern chemists would identify this substance as alcoholic spirits, earlier alchemists preferred to award Rupescissa's panacea a spiritual significance far greater than that of a euphoric beverage. Consequently, his life-giving elixir was appropriated by the pseudo-Lullians to become the foundation of their own alchemical practice.⁴³

By the late sixteenth century the concept of the "coelum" was merging with that of the Paracelsian "flamma vitalis", the fiery virtue in the air produced by the sun's rays. Drawing on the work of Rupescissa, Paracelsus described the fifth essence as the vital spirit of life in his *De natura rerum*, *Archidoxis* and *De vita longa* among other texts. In the *Volumen medicinae paramirum* (circa 1520) he defined the fiery virtue as an "ens astrale",

⁴² Reidy, pp. 53-54.

⁴³ Joannes de Rupescissa, *La Vertu et Propriete de la Quinte Essence de Toutes Choses* (Lyon: Jean de Thoumes, 1549; Milan: Bibliotheca Hermetica, 1971). For an examination of his theories see Thorndike, *M&ES*, 4, pp. 37-41; 5, pp. 630-32.

originating in the celestial bodies, while in the *Liber Azoth* he spoke of the astral virtue as a fire, or a vital saltpetre, or nitre. Through pseudo-Lullian texts, the followers of Paracelsus related the Paracelsian stellar fire to that of Rupescissa's "coelum", specifically Blaise de Vigenere (1523-1596) in his *Discourse of Fire and Salt* (1608). Vigenere described the life-giving property in air as a vital Sulphur, or fire and Salt, stating that these were the basic components of saltpetre. Peter Severinus (1542-1602), physician to the Danish court, related the properties of the thunder to that of saltpetre. Another Paracelsian, Gerhard Dorn, borrowed directly from Rupescissa's original text for his description of the vital properties of air in his *Chymisticum artificii* (1569). John Dee owned copies of Rupescissa's original treatise, in one instance bound together with Paracelsus' *Wunder Arznei*, and he also acquired various works by Dorn, including the *Chymisticum artificii*.

According to Debus it was the Paracelsian chemists of the early seventeenth century who developed the specific theory of the vital saltpetre in air, with Joseph Du Chesne (Quercetanus) producing the full theory.

By the year 1600 it had become a basic part of the Paracelsian tradition to speak of the vital air, or more specifically, the *flamma vitalis* or the vital aerial Sulphur.⁴⁴

Khunrath integrated Rupescissa's quintessence into his own theoretical programme as the Paracelsian "azoth". This aetherial fire increased in significance from its first mention in his *Amphiteatrum* of 1595, becoming the main subject of *De Igne Magorum* (circa 1602-1604). Khunrath also commented extensively on the "azoth" in his second *Amphiteatrum* of 1609, identifying it with the "Magnesia" and with Christ. He also employed Rupescissa's term for the quintessence calling it the "caelum", stating that it corresponded to the cabbalistic "Schamaim", the original substance used by the "Ruah—Elohim" (Christ as Creator God) in the formation of the world. Indeed, Khunrath expanded Rupescissa's astrological medicine into a Christocentric alchemical cosmogenesis.

Fifteenth and early sixteenth alchemical manuscripts and printed books, had pictured the celestial virtue as the fall of a heavenly "dew", or "ros coeli", onto the earth. An illustration of this process, transformed

⁴⁴ Allen G. Debus, "The Paracelsian Aerial Nitre", *Isis*, 55 (1964): 43-61, esp 44-45, 49ff, quote from p. 51. Thorndike, *M&ES*, 5, pp. 630-32. See also Pagel for the influence of Rupescissa on Paracelsus, Pagel "Paracelsus als 'Naturmystiker'" (1979), pp. 91-92. For Dee's collection see R&W: Rupescissa and the ps. Lullian version of his theory, 1405, 1436, 1457, M16, M46; Paracelsus on fifth essence 1496; Dorn 1447, 1512, 1517, 1518, 1524 (*Chymisticum artificii*), 1525, 2227, 2236; Quercetanus 1544.

into a cabbalistic symbol, is also encountered in the engraving of the "Archetypos" in Khunrath's *Amphiteatrum* (1595) (fig. 33). At the top of the illustration, God appears in the form of his Hebrew name, the Tetragrammaton, showering his divine virtues onto the flames of aspiring souls. The original concept of the dew of heaven had been developed and dispersed by an influential alchemical text of the late fourteenth century, the *Rosarium Philosophorum*. This was composed of quotations from the master alchemists of the middle ages, organised into a sequential account of the alchemical process with additional commentaries. Illustrations had been added to the text by circa 1400, although it also continued to be issued without the pictures, the pictorial versions being known as the "Rosarium cum figuris".⁴⁵ The iconographic sequence remained constant between manuscript and printed versions, of which the first appeared in Lyons in 1504. The *Rosarium* did not refer to Rupescissa's "coelum" since it was based on the medieval Aristotelian tradition.

In the *Rosarium*, the picture of the dew of heaven illustrates the final stages of the alchemical work, that of the "ablutio vel mundificatio", a series of purifications (fig. 9). The image depicts a dead hermaphrodite, signifying the incomplete philosopher's stone, being washed by a heavenly efflux. The text cites the Arabian alchemist Senior, who explains that the gross residues require purification on the departure of the volatile spirits.⁴⁶ Later on, an anonymous philosopher is made to comment on the alchemical axiom, "Wash Latona and burn your books".⁴⁷ Latona was the mother of Apollo and Diana, gods of the sun and moon. Some of the aphorisms in the last section of the *Rosarium* became the subject of Maier's emblems in the *Atalanta Fugiens* (1618), including the washing of Latona in Emblem XI. This provides evidence of Maier's interest in the subject of the celestial virtue and it should be noted that he also refers to catoptrics in the same treatise. The text of the *Rosarium* states that the

⁴⁵ Thorndike, *M&ES*, 4, pp. 10-12. In Roberts and Watson's catalogue of his library, John Dee does not appear to have had a copy of the *Rosarium*, but he had copies of all the authors who are cited in it. The authoritative edition of the *Rosarium* is Lutz Claren and Joachim Huber (eds), *Rosarium Philosophorum*, 2 vols (Weinheim: VCH, 1992), see vol 2, Joachim Telle, "Bemerkungen zum 'Rosarium Philosophorum'", pp. 180-86.

⁴⁶ Claren and Huber, p.78: "est res de coelo descendens, et terra cum humore suo suscipit eam et retineatur aqua coeli cum aqua terrae, et aqua terrae propter servitium suum et arenam suam honorat eam, et congregatur aquam in aquam ... et dealbatur ... Senior in Epistola Solis et Lune".

⁴⁷ Claren and Huber, p. 79: "Ideo dicit Philosophus: dealbate latonem et libros rumpite, ne corda vestra rumpantur. Haec est enim compositio omnium Sapientum, et etiam tertia pars totius operis. Iungite ergo ut dicitur in turba, siccum humido, id est terram nigram cum aqua sua, et coquite donec dealbatur".

black ashes should be supplied with "humiditas" to remove their impurities. The author identifies "humiditas" with the "azoth".⁴⁸

The washing of the stone is followed by another picture, depicting the soul returning from heaven to the inert body of the hermaphrodite. This alchemical process is described as "Animae Iubilatio seu Ortus seu Sublimatio". At this stage, the reader is informed, the fire should be stoked up and the chemicals heated, calcinated, albefied (whitened) and otherwise processed. Most notably, the *Rosarium* connects these events with Aristotle's theory of the rotation of the elements which is interpreted as being a process of chemical refinement.⁴⁹ The text also relates this work to the account in *Genesis*, 1, where the spirit of God is described as moving over the waters in the first days of creation. Hence, the idea being expressed in this section of text is that the celestial dew contains the vivifying quality required to animate and perfect the philosopher's stone.⁵⁰ The alchemist Alanus is cited on the livid, metallic, viscous qualities of this celestial fluid which, surprisingly, resembles gross chemical mercury.⁵¹

In the next section of the *Rosarium*, Aristotle is made to state that "Nullum tingens venenum generatur absque Sole et eius umbra, id est uxore" which became the subject of Maier's Emblem XLV in the *Atalanta Fugiens* (fig. 39).⁵² The commentary in the *Rosarium* explains that the process of sublimation consists of removing the purest parts from the faeces of impure matter so that they may attain the quintessential virtue.⁵³ The accompanying illustration pictures the soul departing once again from the body to allow the ashes to undergo further purification.

⁴⁸ Claren and Huber, p. 81. For more information see Pagel (1982), pp. 59-61, including the well-known portrait of Paracelsus in which the word "azoth" is written on the knob of his walking-stick. See also Debus (1964): 43-61.

⁴⁹ Claren and Huber, p. 86.

⁵⁰ Claren and Huber, pp. 87-88: "Senior... Haec aqua divina est rex de coelo descendens. Idem: Ipse est reductor animae ad corpus suum, quod vivificat post mortem suam, et per eum vita est, postquam non erit mors ... Genesis ... Ex aqua omnia facta sunt, et super aquam ferebatur spiritus dei, et principium generationis hominis ex ea".

⁵¹ Claren and Huber, pp. 88-89: "Alanus Philosophus. Una res ex omnibus est eligenda, quae est lividi coloris, habens speciem metallicam limpideam et liquidam, et est res calida et humida, aquosa et adustiva, et est oleum vivum, et tinctura viva, lapis mineralis et aqua vitae mirae efficacie".

⁵² Claren and Huber, p. 89.

⁵³ Claren and Huber, p. 89: "Secunda Sublimatio est extractio, quod in ipsa est de natura quintae essentiae, a fecibus elementaribus separata. Dico autem quintam essentiam animam tingentem, ad quam necessaria est ablutio, ut per eam extrahatur unctuosas arsenice ... sive natura oleaginosae, purissimae unctuositas, quae ligata est cum fecibus suis, quae feces non permittunt ipsam sublimari".

The most important illustration in the *Rosarium* appears near the end of the treatise in a section concerning "Illuminatio", which could provide evidence for the use of solar rays in late medieval alchemy. The picture shows a blazing sun, either rising out of a grave, or falling into it (fig. 10). Although the accompanying text makes no clear reference to the use of sun-light, yet, in its discussion of the perfect nature of gold there may be a hidden allusion to this process. The reader is required to undertake a geometrical exercise involving the form of the circle which is also said to be that of the sun, the dominating astral body.⁵⁴ The sun is described as giving his light to the stars, planets and moon. This solar theme continues into the next stage of the process, that of "Multiplicatio" which is the augmentation of the powers of the stone. The illustration of dew falling onto the dead hermaphrodite re-appears (fig. 9) and Geber is quoted on the multiplication of the "solaris medicinae", potable gold. The reader is instructed to project the elixir of gold, or of the sun's rays perhaps, repeatedly over the ashes.⁵⁵ The final process in the *Rosarium* is that of "Revificatio" which completes the making of the philosopher's stone and is signified by a picture of the soul returning to the body from heaven.⁵⁶

A common factor in all these alchemical theories, those of pseudo-Lull, Ripley, Norton and the *Rosarium*, is that the celestial virtue (occasionally related to the sun's rays) is often conceptualised by geometrical paradigms. It may be concluded that the geometry of these alchemical treatises signifies the use of astrology which is wholly dependent on mathematics and geometry. Out of this general historical context, John Dee was to devise a more specific deployment of the astral virtues in alchemy by means of scholastic optical theory and astronomy and, subsequently, by the cabbalah.

⁵⁴ Claren and Huber, p. 121: "Fili recipe de simplicissimo et de rotundo corpore, et noli recipere de triangula vel quadrangulo sed de rotundo est propinquius simplicitati quem triangulus. Notandum est ergo quod corpus simplum nullum habens angulum [p. 122] quia ipsum est primum et posterum in planetis sicut sol in stellis, quia in Astronomia firmamenti videmus, quod sol est dominus planetarum, et omnes planetes egent lumine suo, quia dat lumen suum sursum usque ad lunam, deinde respicit omnia tam superiora quam inferiora".

⁵⁵ Claren and Huber, p. 146: "multiplicatio elixiris sit duobus modis, una per reiterarium solutionem and coagulationem lapidis, secunda per projectionem primi lapidis elixir super corpus, aut albeum aut rubeum tali quantitate quod idem corpus, etiam convertetur in medicinam".

⁵⁶ Claren and Huber, p. 156. Other 15th-C and 16th-C century illustrated treatises also refer to the dew of heaven, see Jacques van Lennep, *Alchimie* (Brussels: Credit Communal, 1984), pp. 98, 100.

CHAPTER THREE

THE INFLUENCE OF MEDIEVAL OPTICS ON RENAISSANCE ALCHEMY

The science of optics involves the study of light-rays, both in their effects on the human eye and also in their reflective and refractive behaviour on objects such as glass, crystal prisms, mirrors, water, the atmosphere and the effects of distance. This scientific study had been initiated by Greek presocratic philosophers, such as Empedocles¹ and it was substantially extended by Arabian opticians, most especially, Avicenna, Alhazen and Al-kindi. In the middle ages, optics was also given the name "perspective", but from the late Renaissance this term was also used to describe the geometrical construction of an illusionistic three-dimensional space on a two-dimensional surface.

In the West, optics was developed by fourteenth century scholastics such as Bacon, Witelo, Ockham and Pecham following Arabian models, in particular, those of Alhazen's *Optics* and Al-kindi's *De radiis stellarum*.² Medieval optical theories provided the foundation for John Dee's natural philosophy, specifically for his ideas concerning the radiation of light-rays and the effects of the stellar and planetary influences on the earth.³ He devised a practical application for the occult powers of the celestial bodies by means of catoptrics which are described in his *Proopaedeumata Aphoristica* (1558) and *Monas Hieroglyphica* (1564).

The main historical influence on both pragmatic and theurgic optical theories had been Plato, who had attributed the role of sight with a spiritual and practical function. Basing his ideas on Empedocles' concept of the inner fire of the eye, Plato in the *Theaetetus* (153e, 156a-e) stated that the fire within the eye produces a light which unites with the sun's rays to form a single body of light.⁴ In contrast, an empirical interpretation of human vision was produced by Euclid in his treatise on optics, but he continued to believe, like Plato, that there existed a visual ray in the

¹ His theories are recorded in extant fragments and also by some of his followers such as Theophrastus in *De sensu*, see W. K. C. Guthrie, *A History of Greek Philosophy*, 2 (Cambridge UP, 1965), pp. 234-38.

² Leff (1968).

³ Clulee, pp. 39-73. See also Garin (1976) for an account of medieval astrology.

⁴ F. M. Cornford, *Plato's Cosmology* (London, 1948), p. 155; Vasco Ronchi, *The Nature of Light* (London: Heinemann, 1970), pp. 5-7.

form of a cone of light-rays emanating directly from the eye to illuminate its object.⁵ The ancient Greek extramissionist theory of light-rays was the model used at the schools of Chartres and Paris until the twelfth century. Galenic medicine similarly encouraged this particular explanation of vision.⁶

In the early medieval Arab world, a quite different concept of the relationship between light and vision was developed in Baghdad by the mathematician, astronomer and optician Ibn al-Haytham, known as Alhazen (born circa 965). His optical ideas replaced the older extramissionist theories and became the most important influence on post-Chartrean Western optics. Alhazen, following Avicenna, rejected Euclid's notion of a light-ray produced by the eye, devising instead a model of vision as being the result of light entering the eye from the natural world. These light-rays manifested in a geometrical form as "cones" of light (fig. 11).⁷ John Dee procured several copies of Alhazen's *Optics*, but, according to Clulee, he was more influenced by an earlier Arabian philosopher, Al-kindī, whose treatise *De radiis stellarum* was the source of his ideas concerning astral emanation in the *Propaedeumata Aphoristica*.⁸ Like the other Arabian opticians, Al-kindī inter-related optical theory with astrology.

Meanwhile, in the parallel context of metaphysics there existed an explanation of natural light as a divine emanation of God's own self. Plotinus in the *Enneads* (second century AD) inter-related the two formerly distinct theories of the light emanating from the eye and the rays produced by the sun.⁹ In his philosophical system, light became the creative power of God, an act of seeing which generated the physical world as his own reflection.¹⁰ Mostly due to his influence, the Jewish Zohar explained in optical terms the statement from *Genesis* 1: 3, "And God said, Let there be light, and there was light". The *Zohar* commented

⁵ David C. Lindberg, *Theories of Vision from Al-Kindi to Kepler*, (Chicago; London: University of Chicago Press, 1976), pp. 58-67; Ronchi, pp. 15-26.

⁶ Lindberg (1976), pp. 91-95; Ronchi, pp. 40-43; Bruce S. Eastwood, *Astronomy and Optics from Pliny to Descartes* (London: Variorum, 1989), 14, pp. 1-59.

⁷ A. I. Sabra, *The Optics of Ibn Al-Haytham* (London: Warburg Institute, 1989); Lindberg (1976), pp. 58-86; Ronchi, pp. 46-57; Eastwood, 15, pp. 413-46.

⁸ Clulee, pp. 52-59. For Dee's library see R&W: Alhazen 49, M65, M83, M86, M102: Al-kindī 307, M28, M37 and also pp. 30-34.

⁹ Plotinus, *Enneads*, for example, 5. 2. 1; 2. 9. 4; 4. 3. 12.

¹⁰ Eric Alliez and Michel Feher, "Reflections of a Soul" in *Fragments for a History of the Human Body*, *Zone*, 4, (New York: Urzone, 1989), pp. 46-84, esp pp. 57-58.

This is the primal light which God made. It is the light of the eye. This light God showed to Adam, and by means of it he was enabled to see from end to end of this world.¹¹

On these neoplatonic and cabbalistic models, Fludd devised his own christianised image of the creative eye of God in the "Microcosm" (*Utriusque Cosmi ... Historia*, 1619-1621).

From the internal evidence of his writings, it is probable that Fludd was influenced by Khunrath who had earlier evolved an alchemical cosmos of light in his *Amphitheatrum Sapientiae Aeternae*. Khunrath's own source of inspiration was the image of Eternal Wisdom in the form of light in the Old Testament *Book of Wisdom* (11. 21). In his last treatise, *De Igne Magorum* (circa 1602-1604), he also reviewed the ancient religions, such as Zoroastrianism, which had venerated God in the form of light and fire.¹² In reality, these historical beliefs had been more complex than Khunrath supposed since, for the Zoroastrians, light was only one principle co-existent eternally with that of darkness. A similar dualistic position was held by the medieval Manicheans and Cathars, who believed in a luminous deity trapped in an evil material world, causing them to reject natural phenomena as irredeemable enemies of the spirit.¹³ Variant accounts of these two eternal principles of light and darkness pervaded the symbols of medieval alchemy, but it was left to Robert Fludd to admit the full logic of the ontological anxieties concerning the nature of the Divine. In a bold, but not altogether heretical, gesture he produced a unique alchemical image in the *Medicina Catholica* (Frankfurt: William Fitzer, 1629-31) which promoted the idea that light and darkness were two dispositions of the same God (fig. 50).

In response to Gnostic qualms concerning the nature of Absolute Being, Christianity produced a symbol of Christ as the one pure Light, an image which was developed into a Christian tenet by St. Augustine, a former Manichean. Influenced by neoplatonism, Augustine also created an aesthetic in which divine light manifested in the natural world as absolute beauty.¹⁴ Another image incorporated into early Christian iconography was adapted from the late Roman cult of Mithras, a dualistic

¹¹ Gershom Scholem (ed), *Zohar* (New York: Schocken, 1977), p. 5. For the Zohar's expositions on the mysticism of light see Lachower and Tisby (1989), 1, pp. 322-25, 344-47, 441-2 and vol. 2, pp. 437-38 "the eyes of the Lord".

¹² Khunrath, *De Igne*, pp. 20-26.

¹³ M. D. Lambert, *Medieval heresy* (London: E. Arnold, 1977); Geo Widengren, *Mani and Manichaeism* (London: Weidenfeld and Nicholson, 1965).

¹⁴ F. C. Copleston, *A History of Medieval Philosophy* (London: Methuen, 1980), pp. 35, 52-53.

cosmogony of light and darkness. Christ was occasionally given the Mithraic title of "Sol Invictus".¹⁵ Similarly, contemporary late Alexandrian neoplatonists and hermeticists identified the sun with the divine first principle. Thus, Asclepius had regarded the sun as the transmitter of God's beneficence to the earth, nullifying the effects of the negative demonic powers.¹⁶ Subsequently, the neoplatonist Pseudo-Dionysos the Aeropagite propagated a Christian image of the sun as representing the quality of God's Divine Intelligence.¹⁷

In the seventh century, Isidore of Seville integrated Christian and neoplatonic conceptions of the sun with those of natural philosophy in his *Treatise on Nature*. Other sources for Isidore's imagery of the sun were late hellenistic texts which had interpreted the ancient gods as signifying different aspects of the One Divine Being, such as Cornutus in *De Natura Deorum*, or Hyginus on the stellar constellations in his *Fabulae*. The most important source, however, for the development of the subsequent identity of sun and Christ was Macrobius in the *Saturnalia*, who ventured to prove that all gods were subsumed by the Sun as the sole absolute deity.¹⁸ Isidore christianised Macrobius' analogical interpretations and developed them into a cosmogenesis. The sun became Christ's "modus operandi" whereby he conferred life and health on the world (XV: 3).¹⁹ Thereby, Isidore inspired a lineage of medieval texts which implicated the sun into Christ's role as Creator. The lines of Isidore's account of the sun are found in the French *Ovide moralisee* of the early fourteenth century and in the fifteenth century Latin commentary, the *Reductorium morale* by Petrus Berchorius on Chapter XV of Ovid's *De natura deorum*. These texts provided an analogical commentary on Ovid's poem concerning the nature of the pagan gods, regarding them as being various attributes of Christ.

¹⁵ Franz Cumont, *The Mysteries of Mithra* (New York, 1956), passim.

¹⁶ Copenhagen, *Hermetica* (1992), pp. 59-61.

¹⁷ There is a full discussion of neoplatonic and hermetic solar imagery in Debus (1965).

¹⁸ Fridericus Osannus, *Lucius Annaeus Cornutus. De natura deorum* (Göttingen: Johannis Bapt. Casp. d'Ansse, 1844), pp. 194, 200, 225, 328, 372-77, 433, 516-17, 524; H. I. Rose, *Hygini Fabulae* (Brussels: A.W. Sijthoff, 1978), pp. 12, 15, 20, 22, 36, 38; Percival Vaughan Davies, *Macrobius the Saturnalia* (New York: Columbia UP, 1969), Bk I, Caps 17-23, pp. 137-46.

¹⁹ Jacques Fontaine (ed), *Isidore de Seville, Traite de la Nature*, (Bordeaux: Foret et Fils, 1960), pp. 237-43: "sol Christus est, sicut in Malachia scriptum est: ... Merito autem Christus sol intelligitur dictus, quia ortus occidit secundum carnem, et secundum spiritum de occasu rursus exortus est. Item sol inluminat et exurit et opaco tempore confovet sanos, febricitantes vero flagrantia geminati caloris incendit. Ita est Christus credentes fidei spiritu vegetante inluminat, negantes se aeterni ignis ardore torrebit".

Another significant influence on this medieval exegetical tradition was the late antique Fulgentius whose fables of the gods became a popular secular work in the fifteenth century, frequently illustrated.²⁰

During the Florentine revival of classical learning in the fifteenth century, the neoplatonic philosophers Ficino, Pico della Mirandola and, later, Campanella in the early sixteenth century engaged with hermetic ideas of the sacred and magical attributes of the physical sun.²¹ Influenced by the theurgic hermeticism of Iamblichus, Psellus, Porphyry, as well as by the earlier Orphic poems, Ficino in *De Triplici Vitae* (1489) developed talismanic and magical rituals invoking the beneficial attributes of the sun, stars and planets. The recent research of Michael Allen into Ficino's Pythagorean numerology has revealed his interest in optical geometry as a theurgic device, enabling the spirit of the magus to act as a mirror of the "idola" flowing from animate and inanimate objects. Effectively, the mental planes of the magus, like mirror-surfaces, were programmed by geometrical formulae corresponding to the various astral forces. Szonyi in his study of John Dee's *Monas Hieroglyphica* has concluded that Ficino's theurgy was as significant in its influence on Dee's magical practices as were medieval scholastic sources.²²

Since the ancient imagery of the sun had already acquired a Christian meaning by this period, therefore, Ficino's magical operations involving the solar rays had a particularly numinous potency. His method, however, was a misapplied semiotic system, that is, he reified immaterial metaphors by means of false analogies between the abstract sign and its, supposedly physical, referent. In other words, the conceptual contents of a

²⁰ Cornelis de Boer, *Ovide moralisee en prose* (Amsterdam: N. Holland, 1954), Bk I, Cap XLIV-XLVI, pp. 64-68; Bk III, Cap 1, pp. 113; Bk IX, Cap VII, p. 248. Also C. de Boer, *Ovide moralisee* (Amsterdam: Johannes Muller, 1915), pp. 117-32 and Maria S. Van der Bijl, "Petrus Berchorius, Reductorium morale", *Vivarium*, 9, 1 (1971): 25-48, esp pp. 27-33. For Fulgentius see Rudolfus Helm, *Fabii Planciadii Fulgentii Opera* (Leipzig, 1898), Bk I, Cap XII p. 23; Bk III, Cap IX, pp. 73-77. The medieval illustrated Fulgentius is reproduced in Stanislas Klossowski de Rola, *Alchemy* (London: Thames and Hudson, 1973), figs 53-62. Dee had copies of some of these works see R&W: Fulgentius M7, Macrobius 971 and Hyginus 609.

²¹ Kristeller (1979) & D. P. Walker (1958), passim.

²² Michael Allen (1994), pp. 97-99; Szonyi's paper on Ficino and Dee is forthcoming in *Renaissance Quarterly*. Professor Szonyi has kindly drawn my attention to Ficino's optical interests and their consequences for Dee's theories. For Ficino's magical rituals see his *De Triplici Vitae libri tres* (1978), for example, Bk III, Cap I, similitudes of the sun such as heliotrope, myrrh, amber, crocus. Ficino's works are found in Dee's collection see R&W: 404, 736, 1124, 1282, B83, B120, B132, B141, B157, B177. Dee also had a copy of Ficino *De Triplici Vitae* R&W 779, his translation of Plotinus R&W: 108 and his *Opera* R&W: 204, as well as his *Theologia Platonica* R&W: 893.

sign were regarded as being a physical reality. In the same way, Fludd's cabalistic alchemy and medicine in his *Philosophia Sacra* (1626) relied for its effect on the reification of a metaphorical sequence in which the sun was personified as the demiurge, the eye of god, the altar of Christ as the cabalistic Messiah, as well as the primal medicine. Fludd's sun-based medicine, like Ficino's astrological talismanic magic, was based on a semiotic fallacy concerning the ontological status of similitude within a sign.

Due to this unconscious process of reification in mystical symbols, it is not surprising to find the idea of the divinity of light also influencing late medieval experimental optics, otherwise a dour and sober science. In particular, Robert Grosseteste created an optical theory which was based not on the Greeks and Arabs, but on Platonic mysticism. In fact, Grosseteste's treatise *De Luce*, written in the fourteenth century, was modelled on Plato's cosmology in the *Timaeus* which had described a process of creation effected by means of light, fire and geometric measure. Grosseteste inter-related Platonic cosmology with optical theories concerning the emanation of physical light. Thus, he stated, light was the first corporeal form, multiplying itself from a single-point in all directions, whereby it formed a sphere and within it there arose matter. In the subsequent stages of the cosmic creation, there were a series of differentiations in physical matter according to the Pythagorean mode of number, measure and proportion.²³ Fludd mentions Grosseteste in his *Utriusque Cosmi ... Historia* (1619) and even illustrates his cosmogenesis in a magnificent visual image (fig. 46). This engraving shows the dove of the Holy Spirit emerging from the primal divine Word "FIAT" and circling the dark void with a ring of light.²⁴ Fludd, like Plato and Grosseteste, thought that matter was condensed light and he also concurred with them in distinguishing between its material form and the incorporeal Light of Intelligence emanating directly from the Mind of God. Similarly, medieval opticians such as Grosseteste and Witelo influenced one of Fludd's contemporaries, Jacob Boehme (1575-1624), the Protestant German theosophist, who described a remarkable theogony of light in his treatise, *Aurora* (1612), in which the natural light of the sun became the body of the redeeming Son of God.²⁵

²³ James McEvoy, *The Philosophy of Robert Grosseteste* (Clarendon Press: Oxford, 1982), pp. 53-54, 167-80; Alistair C. Crombie, *Robert Grosseteste* (Oxford, 1962); Eastwood, 9, pp. 306-21.

²⁴ Robert Fludd, *Utriusque Cosmi ... Historia*, "Macrocosm", 1 (Oppenheim: J. T. de Bry, 1617), Tract I, p. 49.

²⁵ McEvoy, p. 55; Eastwood, 9, pp. 306-21. For Boehme's concept of the sun in the *Aurora* see Pierre Deghayé, "Dieu et la Nature dans *L'Aurore Naissante* de Jacob Boehme" in Faivre and Zimmermann (eds), *Epochen der Naturmystik* (1979), pp. 125-56, see esp pp.

John Dee also referred to Grosseteste's idea of the creative action of light in his *Propaedeumata Aphoristica*,²⁶ but he relied more on Al-kindī and Roger Bacon for the specific details of his astronomy. Both French and Clulee have argued that Dee revived the knowledge of scholastic scientific and mathematical ideas in an age whose main intellectual interest lay in humanism, to the neglect of the older medieval empirical sciences. Against this argument is the case put by Mordechai Feingold which evidences the continuing strength of the scholastic mathematical tradition in English Renaissance universities.²⁷

In addition, Szonyi's recent examination of Ficino's influence on Dee, specifically that of Ficino's astral magic and his related optical interests, necessitates some modification of Clulee's claim for scholastic philosophy as being Dee's most important resource prior to the 1560s. Partly from the evidence of Dee's library, Clulee had argued that Roger Bacon (mid-twelfth century) was Dee's major preceptor for his astronomical theory, additional ideas being drawn from the Arabs, Grosseteste, Witelo and John Pecham.²⁸ It may be that further investigation by Szonyi will lead to a re-assessment of Clulee's argument.

Dee had a great interest in catoptrics, as is demonstrated in Roberts and Watson's catalogue of his library which contains many Arabic and scholastic resources. Catoptrics was a branch of the science of optics initiated by the ancient Greeks and defined by Archimedes as the study of the refraction and reflection of light-rays by mirrors or prisms. The incendiary properties of parabolic mirrors, which collected and focused the rays of the sun, had already been known in the sixth century AD by philosophers such as Anthemius of Thralles.²⁹ In the medieval period,

129-31. For Boehme's account of Christ as the redeeming light see Will-Erich Peuckert, *Boehme. Samtliche Schriften* (Stuttgart: Frommanns Verlag, 1955), 1, "Aurora Signatura Rerum oder Morgenrothe in Anfang", pp. 263-84.

²⁶ Clulee, pp. 54-57, 67, 153, 164-65. For the large numbers of optical treatises owned by Dee see R&W through-out.

²⁷ Clulee, pp. 52-73; Peter French, *John Dee* (London: Routledge, 1987), pp. 26-27. See a contrasting view in Mordechai Feingold, *The mathematician's apprenticeship* (Cambridge University Press, 1984), pp. 45-85.

²⁸ See Szonyi's paper, forthcoming in *Renaissance Quarterly*. Professor Szonyi is currently pursuing further research on this issue. Clulee's argument is found in his *John Dee's Natural Philosophy*, pp. 39-73. For the history of medieval optics see Eastwood, 10, pp. 51-55 and Ronchi, pp. 60-76. See R&W for Dee's extensive collection of Bacon's work: M96, M17, M19, M20, M41, M61, M72, esp M26. Also Dee's collection of Pecham's work in R&W: 83, 617, M38. Dee had a copy of Bacon's *Liber de sigillis solis insignis secundum Hermetem* with other texts by Bacon on sigills, R&W: M26.

²⁹ Smith, pp. 355-59. The various manuscripts owned by Dee are too numerous to list here, see R&W, for example, M2, M109.

Roger Bacon, in particular, dispersed and popularised catoptrical science through his treatise *De speculis comburentibus*.³⁰ These optical theories were important for the development of Dee's astronomy, but there was one particular idea which may also have affected Dee's alchemy. Bacon had stated in *De multiplicatione specierum* (I, i) that every point on a luminous or coloured body sent forth the image of its visible qualities as "species" in a succession of "multiplications" which were transmitted through a medium such as light, or air, to the eye of the viewer.³¹ Another widely-read fourteenth century optician, John Pecham, had modelled his ideas of the emanation of "species" on those of Alhazen and Bacon.³²

Such medieval optical, astronomical and theurgical resources were collected together and systematised for practical application by Dee who was a mathematician, technologist, educator and medical practitioner, as well as a magician, alchemist and necromancer.³³ In circa 1556 he began to engage in the study of medieval optics,³⁴ an interest recorded in his library catalogue which included three manuscripts of Alkindi's *De radiis stellarum*, along with the works of many other optical theorists.³⁵ Clulee has described the years 1548-1558 as being Dee's Aristotelian phase,³⁶ whereas, in the later stages of his career, hermeticism, cabbalah and neoplatonism played a much larger role than scholasticism.³⁷

It is well-known that in Dee's immediate circle there was a highly developed astronomical interest, for example, the mathematician Thomas Digges was a friend and pupil. Another associate with an equal interest in optics was the mathematician and astronomer Thomas Harriot (1560-1621), a member of the circle at Syon House of Henry Percy,

³⁰ Lindberg (1976), p. 108; Clulee, pp. 64-66. For Dee's holdings of Bacon's optics, see R&W: M17, M19, M20, esp M26, M41, M61, M72, M96.

³¹ Smith, pp. 29-31; Clulee, pp. 56-57; Lindberg (1976), pp. 107-16.

³² David C. Lindberg, *John Pecham and the Science of Optics* (Madison: University of Wisconsin, 1970), passim.

³³ Clulee, pp. 203-30; R&W, pp. 3-54.

³⁴ Clulee, pp. 39-73, esp pp. 64-65; R&W, pp. 30-34.

³⁵ R&W: 307, M28, M37, pp. 30-34. He also acquired Alhazen's works, Boethius's *Arithmetica*, Nicolas Oresme's *Liber divinationum*, Witelo's *Perspectiva*, Bacon's *Opus Tertium*, Grosseteste's *De luce, calore et frigide* and Pecham's *Perspectiva Communis*. These are listed in R&W through-out.

³⁶ Clulee, pp. 40-42.

³⁷ Clulee, pp. 79-80. For Dee's cabbalistic texts see the comment in R&W, pp. 28-29. His Hebrew, Syrian and "Chaldean" collection is mostly catalogued in R&W: 1558-1624. There are more Syrian and Hebrew grammars through-out the rest of the R&W catalogue, as well as the cabbalistic treatises of ps. Lull, Pico della Mirandola, Reuchlin and Postel.

Earl of Northumberland.³⁸ It has been established that Dee also gained information concerning the properties of lenses and mirrors from Gogava's edition of Alhazen on catoptrics (included in his translation of *Ptolemy Opus quadripartium*, 1548). Gogava probably instructed Dee in the manufacture and use of astronomical and optical apparatus.³⁹

Dee himself wrote an richly illustrated but unfinished tract on catoptrics (dated 1558) which is found in British Library MS Cotton Vitellius C.VII, art. 5, *De Speculis comburentibus libri 5* (ff. 280r-309v) (figs. 12-15). From the internal evidence, it seems that Dee intended to prepare this manuscript for publication. In the text he states briefly that his ideas were gathered from ancient philosophers (f. 280r). Dee's subject-matter concerns the Euclidean rules of optical conic sections (f. 309v) (fig. 15), as well as the angles of incidence and refraction of light by mirrors (f. 284r ff), illustrated by several detailed drawings of light-rays reacting to a parabolic surface (f. 282r) (figs. 12-14). Other similar experiments with mirrors and lenses are recorded in manuscripts located in the Bodleian Library, Oxford, such as MS Sloane 3854 which contains a section entitled *Experimenta in Speculo* (ff. 76r ff), among a set of treatises concerning angelic magic. On one folio, there is a drawing of a mirror inscribed with a magic pentacle which demonstrates how Dee enrolled practical optics into the service of his magical rituals (f. 80v).

Dee's optical and astronomical treatise, the *Propaedeumata Aphoristica* was printed in London by Henry Sutton in 1558 and re-printed with his own augmentations by Reginald Wolfe in London in 1568. According to Shumaker, in this work Dee aimed to reduce astrological practice to a set of comprehensible rules based on the physical properties of the planets.⁴⁰ Dee considered that by means of optical instruments it was possible to collect the occult virtues of the stellar radiations,⁴¹ particularly recommending the use of catoptrics in the making of theurgical sigils.⁴²

³⁸ On Dee and Harriot see Feingold, pp. 136-47. For an intellectual biography of Harriot see R. H. Kargon, *Atomism in England from Harriot to Newton* (Oxford U.P., 1966), pp. 18 ff. See also John W. Shirley, *Thomas Harriot Renaissance Scientist* (Clarendon Press: Oxford, 1974).

³⁹ Shumaker, *Prop. Aph.*, pp. 62-64; Clulee, p. 31. In the *Propaedeumata Aphoristica*, Dee also acknowledged the influence of Gerard Mercator, Gemma Frisius and Gaspara Mirica.

⁴⁰ Shumaker, p. 53.

⁴¹ Shumaker, p. 51. The provenance and form of Dee's mirror is discussed by Clulee, p. 262: n. 120.

⁴² Shumaker, p. 67.

Aphorism LII

If you were skilled in "catoptrics" you would be able, by art, to imprint the rays of any star much more strongly upon any matter subjected to it than nature itself does. This, indeed, was by far the largest part of the natural philosophy of the ancient wise men. And this secret is not of much less dignity than the very august astronomy of the philosophers, called inferior, whose symbols ... [are] ... enclosed in a certain Monad⁴³

According to Dee, mirrors could imitate planetary influences, increasing and decreasing the intensity of their radiations catoptrically and imprinting their influences on matter and magical gems.⁴⁴ In these statements, there are traces of the talismanic magic of Ficino, Agrippa and Paracelsus.⁴⁵

Aphorism XXVI

The stars and celestial powers are like seals whose characters are imprinted differently by reason of differences in the elemental matter. In the same way, the engraved forms of our seals are imprinted more easily upon one material than upon another ... You will therefore consider talismans rather attentively, and other still greater things.⁴⁶

Dee also refers to the powerful esoteric practice of pyromancy, the art of fire, in alchemy.

Aphorism II

wonderful changes may be produced by us in natural things by means of the principles of pyromania.⁴⁷

Pyrologians (alchemists) are mentioned again in another section whose obstetrical character recalls Paracelsus' alchemical cosmogony in *Philosophia ad Athenienses*. Dee speaks of the "four separate great wombs of the world" (air, fire, water, earth) which are constituted of "three separate parts", probably alluding to the Paracelsian trinity of Sulphur, Mercury and Salt.⁴⁸ Moreover, Dee's eulogy of the occult properties of fire is similar to that of Paracelsus in the *Archidoxa* which may have influenced Dee even at this early date.⁴⁹ He also refers to the cabbalistic practice of "notarikon".

⁴³ Shumaker, p. 149.

⁴⁴ Shumaker, Aphorisms, LIIII, LV and LXXXIX, pp. 148-51, 174-75.

⁴⁵ See Szonyi (1999).

⁴⁶ Shumaker, pp. 134-35.

⁴⁷ Shumaker, pp. 122-23.

⁴⁸ Allen G. Debus, *The Chemical Philosophy*, 1 (London: Heinemann, 1977), pp. 51-76.

⁴⁹ Sudhoff, I, 3, pp. 92-200, *Decem libri Archidoxis*.

Aphorism XVIII

In the four separate great wombs of the larger world are three distinct parts; these are, however, at the same time condensed, structured and regulated by their own appropriate weights and may now be called, by notariacal design, AOS, or OSA, or SOA (for pyrologians will understand me if I speak so)⁵⁰

Since Khunrath admitted to an admiration for Dee's work and specifically referred to the *Propaedeumata Aphoristica* in his *Amphiteatrum*, it is probable that his own pyromantic theories were influenced by this passage in Dee's treatise.⁵¹

Of similar importance to Khunrath's alchemical practices were Dee's references to Bacon's theory of the "multiplication of species".⁵² Dee argues that everything sent forth rays as "species" of itself which emanated from every point of the object in a spherical fashion,⁵³ but, whereas species in general did not require light in order to create an effect on another object, those of the celestial spheres could only operate by means of light-rays.⁵⁴ In addition, the distance of a heavenly body from the earth determined the effect of the stellar species on the lower world. In other words, in Dee's account, the rays of the stars operate in the same manner as the cones of light-rays emanating from an object to the human eye. The crucial point is that the geometrical laws governing human vision are exactly the same as those determining the radiation of light from the stars.

Dee stated that the rays of the stars took a conical form, whose base was located on the face of the star, with the apex on the earth below. The rays within the geometrical cone grew stronger as they approached the central ray which stood at the perpendicular within the cone of rays.⁵⁵ Hence, it was the centric ray which the theurgist had to project onto his materials.⁵⁶ Therefore, according to Dee, it was necessary to perform magical operations when the appropriate star stood at the perpendicular to the horizon of the earth and was nearest to the earth.⁵⁷

In due course, these aspects of Dee's astrological theory will be considered in their influence on the alchemical illustrations of Khunrath, Maier and Fludd. Of specific importance to these later alchemists was Dee's

⁵⁰ Shumaker, pp. 128-29.

⁵¹ Khunrath (Hanover, 1609), p. 6.

⁵² Shumaker, p. 62; Clulee, pp. 56-57.

⁵³ Shumaker, p. 63.

⁵⁴ Shumaker, p. 64.

⁵⁵ Shumaker, Aphorisms XXXII-XLVIII, pp. 136-37.

⁵⁶ Shumaker, Aphorism XXXIII, pp. 136-38.

⁵⁷ Shumaker, Aphorism LIIII, pp. 148-51.

portrayal of the geometrical cones of astral influences and the manner in which they imprinted their qualities onto base matter. Although Clulee has stated that Dee made astrology of practical use to alchemists for the first time, he was referring only to Dee's specifically alchemical treatise, the *Monas Hieroglyphica*.⁵⁸ Yet, the earlier *Propaedeumata Aphoristica* had an equal practical import for alchemists since it was offering them a shortcut to their goal of transmutation by means of Dee's system of astronomical catoptrics. The use of his optical theory in their laboratories would allow alchemists to summon species from the stars to impregnate and thereby transmute their gross "prima materia" into a higher form. For example, they could summon the species of silver from the moon, or gold from the sun.

A substantial re-orientation of alchemical theory towards astral-magic had already been initiated by the publication of Paracelsus' writings in the mid-1550s, as well as by the cabbalah. As a result of such influences, a cabbalistic theogony of light was eventually developed by Paracelsian alchemists such as Heinrich Khunrath, Edward Kelley, Oswald Croll, Michael Sendivogius and Stefan Michelspacher. Even the Jesuit encyclopaedist Athanasius Kircher, though declaring himself to be a sceptic, nevertheless, considered alchemical theory with deep interest in his treatises which also proudly displayed his own catoptrical apparatus (fig. 20). Thus, from the late sixteenth century, alchemists increasingly lifted their eyes from their furnaces to inspect the divine actions of the heavenly fires.

In his later treatise, the *Monas Hieroglyphica* of 1564, Dee presented a more sophisticated metaphysical structure based on cabbalism to justify his catoptrical alchemy. Nevertheless, in terms of effective benefit to contemporary alchemists, Dee had already provided much the same information in the *Propaedeumata Aphoristica*. Although Clulee does not consider that alchemy was of interest to Dee in the 1550s, there are, nevertheless, sufficient hints within the text of the *Propaedeumata Aphoristica* to indicate that Dee envisaged an alchemical purpose for his astral catoptrics.

⁵⁸ Clulee, p. 106.

CHAPTER FOUR

PARACELSIAN ALCHEMY: THE "ASTRAL VIRTUE" AND THE "AERIAL SALTPETRE"

The controversy generated by the medical theories of Paracelsus (1493-1541) was caused not only by his adoption of alchemical methods for preparing medicines and his innovatory use of inorganic substances, but also by his disturbing synthesis of medicine, magic, theology and cosmology. Paracelsus' ambitiously expansive (and often self-contradictory) vision forced his educated contemporaries to re-assess both their professional activities as physicians, as well as their philosophical systems and even their religious beliefs.

Paracelsus' own Christian commitment cannot be doubted, for this was one of his declared reasons for his attack on pre-Christian medical theorists such as Galen. Nonetheless, Paracelsus developed a monistic theosophical structure for his chemical universe in his account of the union between the astral human faculties and the macrocosm. Similarly, in his cosmogenical theories, the primal four elements emerged directly from the soul of the universe.¹ The chief adversary of Paracelsus in the second half of the sixteenth century was the Protestant theologian Thomas Erastus (1523-1583) who castigated Paracelsus for his superstitious medical practices, specifically his use of astrology.² Alchemists such as Khunrath and Fludd who joined the Paracelsian school had to address significant theological issues to avoid constructing a philosophical system equating God with nature.³

In the *Philosophia ad Athenienses*, Paracelsus described a cosmos whose form was that of an alchemical still,⁴ fabricating a monistic model of the world's emergence from the "mysterium magnum", a prime matter un-

¹ Pagel, "Paracelsus als 'Naturmystiker'" (1979), pp. 60-62, 70-74. For Erastus see Thorndike, *M&ES*, 5, pp. 617-51. See also Frick, *Die Erleuchteten* (1973), pp. 112-122.

² Debus (1977), 1, pp. 129-34; Thorndike, *M&ES*, 5, pp. 652-67.

³ Walter Pagel, "The Prime Matter of Paracelsus", *Ambix*, 9 (1961): 117 ff.

⁴ Debus (1977), 1, pp. 51-61, 76, 86-87. These texts are found in Sudhoff, I, 8, *Das Buch Paragranum*, pp. 31-126, see esp pp. 31, 115, 133 and I, 9, *Opus Paramirum*, pp. 37-223 and also I, 10, pp. 7-487, *der Grossen Wunderarznei*.

derstood to be life itself, or the soul,⁵ the mother of all phenomena, both substantial and insubstantial.⁶ In the primal creative act God separated the elements from each other, acting in the manner of a chemist in his laboratory.⁷ Out of insubstantial prime matter there emerged the four proto-elements which were the primal qualities of fieriness, airiness, wateriness and earthiness, which, in turn, created the secondary material elements of fire, water, earth and air.⁸ The chemical processes of separation and coagulation produced a mixture of the four secondary elements which Paracelsus termed the "Ilyaster", containing all the objects of material creation.⁹ In addition to these elements, the cosmic order rested on three other principles, Mercury, Sulphur and Salt.¹⁰

In a variety of other texts, Paracelsus promoted the idea that the human-being was an integral unity with the macrocosm of stars and planets, formulating, therefore, a series of practical techniques, such as astrology, astral-magic, rituals, chemical potions and talismans, whereby this relationship could be exploited in medicine, as well as in prognostication.¹¹ In *De pestilente* Paracelsus explained that a human-being consisted of both an animal and a sidereal body, made from fire and air.¹² For example, in *Das Buch Paragranum* Paracelsus explained that

The inner stars of man are, in their properties, kind, and nature, by their course and position, like his outer stars, and different only in form and in material ... Just as the sun shines through a glass—as though divested of body and substance—so the stars penetrate one another in the body ... For

⁵ Sudhoff, I, 13, *Philosophia ad Athenienses*, pp. 389-423. See also Walter Pagel, "The Prime Matter of Paracelsus", *Ambix*, 9 (1961): 117 ff.

⁶ Sudhoff, I, 13, *Philosophia ad Athenienses*, pp. 390-92. See Pagel, "Paracelsus als 'Naturmystiker'" (1979), pp. 63-67.

⁷ Sudhoff, I, 13, *Philosophia ad Athenienses*, p. 393.

⁸ Sudhoff, I, 13, *Philosophia ad Athenienses*, pp. 396-98. See also Debus, (1977), 1, pp. 51-61.

⁹ Debus, (1977), 1, pp. 51-61; Walter Pagel and Marianne Winder, "The Higher Elements and Prime Matter in Renaissance Naturalism and in Paracelsus", *Ambix*, 21 (1974): 93 ff.

¹⁰ Sudhoff, I, 13, pp. 7-123, *Philosophia de generationibus et fructibus quatuor elementorum*, see esp pp. 9-23 on the elements and the Ilyaster. These ideas are discussed in Pagel, "Paracelsus als 'Naturmystiker'" (1979), pp. 67-69.

¹¹ Sudhoff, I, 3, pp. 92-200, *Decem libri Archidoxis*; I, 12, pp. 1-444, *Astronomia Magna*; I, 12, pp. 500 ff *De probatione magiae*. I, 12, pp. 502-3, *De divinatione*. I, 12, pp. 503-4; I, 14, pp. 1-378, *Philosophia magna, de divinis operibus et secretis naturae*. See Pagel (1982), pp. 64-67.

¹² Jolande Jacobi (ed), *Paracelsus Selected Writings* (New York: Pantheon, 1951), p. 92 (translation of Sudhoff, I/14, 597-98 *De pestilente*. Sudhoff lists this text as spurious).

the sun and the moon and all planets, as well as all the stars and the whole chaos, are in man ... The body attracts heaven ... and this takes place in accordance with the great divine order.¹³

Moreover, a human-being partook of the character of the four elements.

Man consists of the four elements, not only—as some hold—because he has four tempers, but also because he partakes of the nature, essence and properties of these elements. In him there lies the "young heaven" which is their father. For man was created from heaven and earth, and is therefore like them.¹⁴

Similarly, the heavens reflected the nature of the human constitution.

In the heavens you can see man, each part for itself; for man is made of heaven. And the matter out of which man was created also indicates to you the pattern after which he was formed.¹⁵

Consequently, humanity was a mirror of the cosmic structure, reflecting the cosmic body of Anthropos.

Within the metaphysical construction of the world, Paracelsus placed the supreme influence of divine light which he considered to be the higher intelligence in both the natural world, as well as in humans.¹⁶ In the *Philosophia magna, Liber de nymphis*, however, he distinguished between the light of nature ("das Licht der Natur") and that of the human spirit and intelligence.¹⁷ The idea of the light of nature was developed in mathematical terms in the *Astronomia Magna* (1537-8) in which Paracelsus discussed the importance of mathematics in the study of natural philosophy. He explained that astronomical mathematics examined the manner in which the stars caused generation and creation on the earth, their effects being related to their height, profundity, amplitude and angular juxtapositions. There is a close relationship between these Paracelsian ideas in the *Astronomia Magna* and Dee's theories in the *Propaedeumata Aphoristica* of 1558, although neither Debus, nor Clulee, have discussed this relationship. In some of his ideas concerning the essential role of astronomy in developing both intellectual understanding and the

¹³ Jacobi, pp. 160-64 (*Paragranum*); Pagel (1982), pp. 65-68.

¹⁴ Jacobi, pp. 160-64 (*Paragranum*).

¹⁵ Jacobi, pp. 31ff (*Paragranum*).

¹⁶ Jacobi, p. 117 (Sudhoff, I/9, p. 253 *Opus Paramirum*). The full transcription of this work is found in Sudhoff, I, 9, pp. 37-229, 231-47.

¹⁷ Jacobi, pp. 115 ff, esp pp. 117-18 (Sudhoff, I/14, pp. 115-51, *Philosophia magna Liber de nymphis*); Pagel, "Paracelsus als 'Naturmystiker'" (1979), pp. 59-60.

higher "gnosis" of the spirit, Paracelsus was drawing on cabbalistic thinking.¹⁸

Paracelsus rejected the ancient natural philosophers, replacing Aristotle with christianised neo-platonic and hermetic authorities, discarding also the medical canon of Avicenna and Galen.¹⁹ Instead, he believed that physical ailments were the result of external forces rather than of an imbalance of fluids, as in the medieval theory of the four humours. Each organ of the body, Paracelsus explained, contained a dynamism called the "archeon" which functioned as an internal alchemist. Moreover, he believed that each illness originated in a particular star whose virtue was embodied in the corresponding earthly "arcanum", a medicine which could heal the ailment.²⁰

Paracelsus was not the first to adapt alchemy to medicine, since John of Rupescissa and Arnold of Villanova in the fourteenth-century had developed the alchemical concept of the fifth essence into a medical theory.²¹ Paracelsian alchemy was not concerned with transmutation, but with the preparation of medicines. Paracelsus departed from Arabic medicine mostly in his conviction that chemically prepared inorganic medicines were superior to the herbal preparations of medieval physicians. To this end, he stressed the importance of the metals, particularly mercury, antimony and iron salts, advocating also the medicinal use of poisons, such as arsenic, in strict dosages.²² He prepared these by means of distillation in order to purify and intensify the volatile spirits of the substance by removing the impure earths. This would introduce the hidden virtue of the star governing the disease and induce healing by homeopathic means.²³

According to the Paracelsian doctrine of signatures, the "astra" (stellar virtues) present within all natural bodies were the foundation of practical medicine, since each person had an astral body which overlay and penetrated his physical body, so that the external and imminent "astra" were

¹⁸ Pagel (1982), pp. 71-76; Allen G. Debus, "Mathematics and Nature in the Chemical Texts of the Renaissance", *Ambix* (1968): 1-28; Pagel, "Paracelsus als 'Naturmystiker'" (1979), pp. 59, 65-66.

¹⁹ J. R. Partington, *A History of Chemistry*, 2 (London: Macmillan, 1961), pp. 115-51; Pagel (1982): 130-58.

²⁰ Pagel (1982): 105-12; Pagel, "Paracelsus als 'Naturmystiker'" (1979), p. 85 "jede Krankheit ein Stern".

²¹ Thorndike, *M&ES*, 3, pp. 347-69; 4, pp. 37-41; F. N. L. Poynter (ed), *Chemistry in the Service of Medicine* (London, 1963), pp. 5-26, esp p. 17.

²² Pagel (1982), pp. 133-56.

²³ Pagel (1982), p. 70; Pagel, "Paracelsus als 'Naturmystiker'" (1979), p. 63.

effectively the same entity. Thus, Paracelsus stated, a remedy was dependant on the astrological effects of the heavens.²⁴ In the *Volumen medicinae paramirum* (circa 1520), he urged the physician to acquire a sound knowledge of astronomy in order to understand the effects of the astral emanations by means of which God had impressed earthly things with "signatures".²⁵

For a clearer understanding of Paracelsus' theory of "signatures", it is helpful to consider Foucault's analysis of the Renaissance concept of the world as being constructed on the basis of similitude and difference. The Renaissance taxonomy of phenomena, whether spiritual, physical, aesthetic or linguistic, was based on the idea that representation (similitude) was that which guaranteed their authenticity. Similitude was judged in the terms of adjacency ("convenientia"), analogy ("aemulatio") and sympathy ("concordia"). This taxonomy was inscribed within the universe in the form of signs, decipherable only by an elite of natural philosophers. As Foucault points out, in the sixteenth century no distinction was made between the empirical observations of the natural philosophers and those of theologians, or occultists. All of these systems of knowledge were dependent on their ability to read the inscriptions which already pre-existed in the forms of the world. Foucault argues that Renaissance signs were organised into a conceptual structure consisting of three qualities which were the marks of the sign, the things designated by those marks and the similitude between them. Since it was "aemulatio" which constituted both the form and the content of the sign, these three elements operated as a single figure. Foucault's contention is that in the seventeenth century this triple construction of a sign became a binary in which a signifier ("significans") was connected to a significance ("significandum"), abandoning the quality of similitude.²⁶

Foucault's argument provides one explanation for the intensity of the late Renaissance search for the "lingua Adamica" through the devices of magical cryptography. The issue of the Adamic language has been discussed by Szonyi in his study of the influence of Paracelsian talismanic linguistics on Dee's theurgy. (Dee had certainly procured two copies of Paracelsus' *Expositio magicarum figurarum*). In contrast to the characterisa-

²⁴ Pagel (1982), pp. 67-71. Pagel gives an excellent explanation of the Paracelsian "astra" in his "Paracelsus als 'Naturmystiker'" (1979), pp. 70-74.

²⁵ Pagel (1982), pp. 59-61.

²⁶ Michel Foucault, *The Order of Things* (London; New York: Tavistock; Pantheon, 1970), pp. 30-94. For a more specific historical account of the epistemological changes in sixteenth century culture see Will-Erich Peuckert, *Die Grosse Wende* (Hamburg: Claassen and Goverts, 1948), pp. 299-474.

tion of Dee by previous historians such as Yates, Clulee and Sherman, Szonyi has offered a rather different interpretation of Dee's intellectual activity.

Dee as a "magus" ... had an amazingly wide range of interests but [he] also increasingly had a focusing obsession, a magical program, not necessarily to improve the sciences in order to prepare the scientific revolution, rather to find an alternative system of knowledge ... Dee clearly distinguished between science after the Fall and that of primordial wisdom. His aim was to restore the Adamic or Enochian wisdom of the Golden Age and that would not be compatible with the methods and means of the fallen science relying on discursive logic.²⁷

If it was indeed the case that late sixteenth century intellectual culture was in the process of inaugurating a new episteme, that of the scientific revolution and the enlightenment, then there may well have been a sense of existential panic, a feeling that meaning was becoming ever more difficult to retrieve from the open book of nature. The interest in magical cyphers may have been an attempt to close the widening gap arising in cultural semiosis in which the signifier was slipping away from its referent.

The Renaissance came to a halt before the brute fact that language existed: in the density of the world, a graphism mingling with things or flowing beneath them ... the existence of language preceded, as if by a mute stubbornness, what one could read in it and the words that gave it sound. From the seventeenth century, it is this massive and intriguing existence of language that is eliminated ... one might say that language in the Classical era does not exist: it functions.²⁸

For Paracelsus, the primal language of signatures was inspired by God's manner of sustaining the cosmic order, inscribing the forms of all manifestation with a stellar emanation, the "azoth". In his *Liber Azoth* he had referred to it as an aerial nitre, or saltpetre, transmitted by the rain to the earth from the spirit of the sun.²⁹ His followers, Severinus, de Vigenere, Sendivogius, Quercetanus and Fludd developed the full idea of the aerial saltpetre at the end of the sixteenth and in the early years of the seventeenth centuries. Another origin for the concept of this astral virtue was

²⁷ Quote from Szonyi "Ars Sintrilla" (1999), passim. See also Szonyi "O Worke Divine" (1984), pp. 353-94. Dee's Paracelsian texts on sigils are listed in R&W: 844, 956.

²⁸ Foucault, p. 79. See also Brian Vickers, "Analogy versus identity: the rejection of occult symbolism, 1589-1680" in Brian Vickers (ed), *Occult and Scientific Mentalities in the Renaissance* (Cambridge UP, 1984), pp. 95-163.

²⁹ Debus (1964): 43-61, esp. 44-45, 49ff.

the use of nitrates in the manufacture of gunpowder, a major European industry in the sixteenth and seventeenth centuries. In the industrial process, nitrate salts were exposed to the elements and the solar rays in order to enhance their explosive, preservative and generative properties. Paracelsus in the *Grossen Wunderarznei* considered that such virtues were impregnated into the salts by the aerial virtue, explaining thunder and lightening as being caused by a "Saltniter-Sulphur", while the stars themselves were composed either of sulphur, or nitre. John Dee had at least two copies of the *Grossen Wunderarznei*, as well as the work of Bodenstein, Suchten, Quercetanus, Severinus and Dorn.³⁰

Quercetanus (1544-1609) stated that Salt was the true and essential medicine appearing in three forms, marine, fixed and nitrous. All of these were related to generation, but of these three spirits of Salt, he considered that saltpetre, originating in urine, was the highest form since it partook of the three kinds of life, animal, vegetable and mineral and also embodied the three principles of Sulphur, Mercury and Salt. Du Chesne believed that the highest form of saltpetre was alchemical, rather than the vulgar version produced by industrial chemists and fireworks specialists.³¹

Despite Du Chesne's rejection of empirical chemistry, the Paracelsian alchemist Michael Sendivogius (1566-1636) referred to the industrial process of weathering nitric salts by means of the sun and the elements in his *Novum Lumen Chymicum* (1604). Szydlo has argued that his chemical work demonstrates that Sendivogius intuited the existence of oxygen, even producing this gas prior to Lavoisier.³² Andreas Ortelius wrote a commentary on Sendivogius' *Novum Lumen Chemicum* which was published in Eberhard Zetzner's *Theatrum Chemicum* (Strassburg, 1656), accompanied by a set of engravings, one of which shows an open alchemical flask positioned in front of a window, while another depicts a tub of chemicals standing in the open air (fig. 16).³³

Paracelsus had examined the alchemical role of the sun in his *Neun Bucher Archidoxis* (circa 1526-1527) in which he compared the earthly fire

³⁰ Zbigniew Szydlo, *Water Which Does Not Wet Hands* (Warszawa: Polish Academy of Sciences, 1994), pp. 67-92. For Paracelsus see Sudhoff, 10, pp. 7-423 *der Grossen Wunderarznei*; Debus (1964): 44-47. For Dee's collection see R&W: 521, 1447, 1457, 1465, 1526, 1544, 2227, 2236.

³¹ Debus (1964): 51-54.

³² R. J. W. Evans, *Rudolf II and his world* (Oxford U. P., 1973), p. 211-12; Szydlo (1994). Sendivogius appears as "Sarmatus" in Michael Maier, *Symbola Aureae Mensae* (Oppenheim: J. T. de Bry), Bk XII, pp. 553-60 esp. pp. 555-58.

³³ Andreas Ortelius, "Commentator In Novum Lumen Chymicum Sendivogii" in *Theatrum Chemicum*, 6 (Strassburg: Zetzner, 1656), illustrations on pp. 413, 415.

in the alchemical furnace to the sun's heat. This text was issued in many editions from the 1570's and it had a considerable influence on occultist practices. Paracelsus described the aethereal spirit, or fire, of the celestial bodies as creating the corresponding earthly phenomena, stating that the alchemical tincture obtained its virtues not from earthly chemicals, but from the spirit of the sun as its imminent "astra".³⁴ Certainly, Khunrath's concept of the philosophical fire in *De Igne Magorum* was closely modelled on the *Archidoxa*.

Most of Paracelsus' treatises were published after his death, the greatest number appearing in the 1570's when the *Archidoxa* was issued in a number of editions (including spurious versions). The first full compendium of Paracelsus' texts was issued in Basle by Peter Barna in 1589-90 and another important collected edition was that of John Huser of Waldkrich in Cologne (1589-91; 1603; 1605). In England, according to Debus, the use of chemical medicines had been long accepted prior to the Paracelsian influences due to the writings of Arnald of Villanova, the pseudo-Lullians and Hieronymus Brunschwig. By the 1580's, there were a great number of reputable Paracelsian followers both on the continent and in England, such as Conrad Gesner of Zurich (1516-1565) who was a friend of Dee. Gesner's treatise on distillation was translated by Thomas Hill and published in England by George Baker as the *Treasure of Euonymous* (1559). Leonhard Thurneysser, whom Dee had met in Frankfurt-on-Oder in 1578, was another influential source in England for distillation techniques.³⁵ English Paracelsians included Richard Bostocke who borrowed Dee's Paracelsian texts and wrote the first Paracelsian apology in English, *The Difference between Auncient Phisicke ... and the latter Phycike* (1585). Thomas Moffett (1553-1604), member of the College of Physicians, was another influential Paracelsian who wrote of his respect for Dee. Paracelsian theosophy was publicised by Thomas Tymme, rector of St. Antholin's church in London from 1605, who also proposed to translate Dee's *Monas Hieroglyphica* into English and he prepared an introduction to the text.³⁶

³⁴ Sudhoff, 3, pp. 86 ff *Neun Bucher Archidoxis*. For the various versions of this text, both authentic and spurious see Karl Sudhoff, *Bibliographia Paracelsica (1527-1893)* (Berlin: Reimer, 1894), pp. 183-207, 215-17, 239-41.

³⁵ For the detailed chronology of Paracelsian publications see Sudhoff, *Bibliographia Paracelsica* (1894), pp. 3-39 Paracelsus' own work in the years 1549-57 and pp. 60-365 for Paracelsian followers in the period 1560-88. For English Paracelsians see Debus (1965), pp. 49-85 and Robert Multhauf, "Medical Chemistry and the 'Paracelsians'", *Bulletin of the History of Medicine*, 28 (1954): 101-26. For Dee's collection see R&W: Thurneyser 240, 258, 1455, 1456, 2183, 2275; Gesner 210, 1448, B138.

³⁶ R&W, p. 179; Debus (1965), pp. 70ff.

It was within this social and intellectual milieu that in the 1560's John Dee redirected his interests from scholasticism to alchemy, cabbalism and star-magic. Although Dee can be described as a hermeticist in being influenced by that historical corpus, not all scholars are agreed that Dee was himself a Paracelsian alchemist. In fact, Debus made a categorical distinction between Paracelsus and Dee on the grounds that Dee's alchemy was of a pre-eminently mathematical character. Consequently, neither Debus nor Clulee take any account of potential influences from the Paracelsians on Dee.³⁷ Szonyi, on the other hand, has argued for the direct influence of Paracelsus on Dee's angelic magic, comparing Paracelsus' definition of "Gamaaea", magical talismans with Dee's account in the *Propaedeumata Aphoristica* and the *Monas Hieroglyphica*. Szonyi has found that Dee's *Monas* had the same two levels of reference as the Paracelsian talismans, namely, the earthly material which is rendered into a supernatural substance by the alchemical process, as well as the talismanic aspect which transforms the alchemist himself into a more elevated spiritual state. Szonyi has also related the triple-level magical cosmos of Paracelsus and Dee to that of Agrippa and, more recently, to Ficino's in *De Triplici Vitae*.³⁸

Other important evidence of Dee's Paracelsian interests has been supplied by Roberts' and Watson's analysis of Dee's library which has revealed that he was the major exponent of Paracelsian theory in England.³⁹ Although there is no evidence that he specifically trained as a physician at Cambridge,⁴⁰ it appears that in private he both practised and taught Paracelsian medicine. Between 1560 and 1583 Dee's library was one of the largest in Europe, especially in the areas of medieval science and alchemy. From the late 1540's he had enthusiastically collected manuscripts and printed books, but Paracelsus and the Paracelsians dominated his alchemical collection.⁴¹ Roberts and Watson have remarked on the large number of duplicates in his library, mostly of alchemical, mathematical and scientific works.

³⁷ Debus, (1977), 1, pp. 44-46; Clulee, pp. 96-106.

³⁸ Szonyi (1999) and also forthcoming in *Renaissance Quarterly*. For Dee's ownership of two copies of Paracelsus on magical insignia *Expositio magicarum figurarum* see R&W: 844, 956.

³⁹ R&W, pp. 41-45, 53.

⁴⁰ Peter French, *John Dee* (London: Routledge and Kegan Paul, 1987), pp. 23-28.

⁴¹ R&W, pp. 3-6, 26-40, 53. Dee's Paracelsian texts included the *Astronomia Magna*, *Paramirum*, *Paragranum*, *Philosophia Magna*, *Philosophia ad Athenienses*, *Wunderarznei*, *Archidoxa* and his work on theurgic sigills, as well as books by Bodenstein, Toxites and Suchten among others, see R&W: 65, 289, 844, 956, 1457, 1461-1535, 2220-2276.

If our theory that duplicates were intended for use by pupils is correct, it is very likely that Dee taught Paracelsian medicine.⁴²

Dee's chief associate in the 1580s was Edward Kelley who was well-versed in Ripley and Agrippa. Kelley had moved into Dee's house at Mortlake on 10 March 1582, collaborating with him until 1589, a period which included their joint travels in Eastern Europe from 21 September 1583 until November 1589.⁴³ They had journeyed initially to Poland with Albert Laski, Palatine of Sieradz, who had financed the first published edition of Paracelsus' *Archidoxa Philosophiae* (Cracow, 1569). From September 1584, Dee and Kelley sojourned at the Imperial court in Prague where they would have encountered Paracelsian alchemists and physicians such as Oswald Croll, Leonhard Thurneysser (whom Dee had known since the 1570s) and Heinrich Khunrath. Later in the 1590's Michael Maier and Michael Sendivogius attended the same court.⁴⁴ Kelley remained in Prague on Dee's return to England in 1589.⁴⁵

Although Kelley's alchemical theory exhibits a dependence on Ripley, he may have been influenced to a certain extent by Dee's catoptrics, since in one of his alchemical poems he describes the lighting conditions necessary for the preparation of chemicals.

Sublyme thine Earth with stinkeing Water erst,
Then in a place where Phoebus onely tayle
Is seene att midday, see thou mingle best :
For nothing shineth that doth want his light,
Nor doubleth beames, unlesse it first be bright.⁴⁶

The alchemist Oswald Croll, a close associate of Kelley's in Prague, was another of the Paracelsians responsible for developing the concept of the aerial saltpetre and its relation to the solar forces. Croll's *Basilica Chymica*

⁴² R&W, p. 42. Dee acquired ninety-two editions of Paracelsus in one-hundred and fifty-seven copies. See also Sherman, *John Dee* (1995) on the political aspects of Dee's learning and on his role as a magus within Elizabethan society.

⁴³ For Dee in Europe see French, pp. 113-17, 120-2; R&W, pp. 47-49; Evans, pp. 219-20. An example of Kelley and Dee's use of Ripley is found in James Orchard Halliwell, *Diary of Dr John Dee* (Camden: London, 1842), p. 43 and also in Edward Fenton, *The Diaries of John Dee* (Charlbury, Oxon: Day Books, 1998), p. 233.

⁴⁴ Evans, pp. 219 ff.

⁴⁵ French, p. 113 & R&W, pp. 50-51.

⁴⁶ Ashmole, *Theatrum Chemicum Britannicum*, pp. 324-33, quote from pp. 332-33. See also Kelley's treatises in K. C. Schneider, *Geschichte der Alchemie* (Halle, 1832), pp. 304ff, 308. One such treatise is Oxford Bodleian Library MS Ashmole 1420, ff. 89-94. Others may be found in Waite (London, 1893), passim.

(Frankfurt, 1609) describes the central importance of the sun in the making of the universal panacea.⁴⁷ He refers to the sun as the fount of life, the eye both of the material world and of the heavens, as well as the breathing-vent of the life of the elements.⁴⁸ Croll's recipe for the production of potable gold included the most fearsome ingredients. It was based on sublimed calx of Sol (chemical gold), to which was added a pound of common ferric aqua fortis (iron dissolved in nitric acid). In this liquid there was to be dissolved one ounce of ammonia salts on a low heat, producing "aqua regis" (a savagely corrosive, foaming mix of hydrochloric and nitric acids). This would dissolve as much gold as was required. Fortunately, Croll provided additional recipes for refining this potent brew.⁴⁹

Dee's own chemistry is recorded in his widely-dispersed diary jottings, as well as in several notebooks in the British Library and the Bodleian Library, Oxford.⁵⁰ These fragmentary documents, accounting for Dee's alchemical practice from the 1580s through to the early 1600s, have had little attraction for scholars, but they are worth considering since they contain some evidence that Dee was interested in the Paracelsian "materia medica". One of the most complete journals of Dee's practical chemistry is found in Bodleian Library Rawlinson MS D 241 (13050). Although dated 1601, it is an account of various experiments undertaken by Dee from June 1581, prior to his European journey. Since some of this text is not written in his own hand, it seems likely that he was employing an assistant. Another manuscript which provides additional clues concerning Dee's personal alchemical practice is Bodleian Library MS Ashmole 1486, in which the early part (pars. VI) is a compendium of texts bought into his library and occasionally annotated by Dee. At the end of this collection (pars V, bound in reverse order) are found Dee's laboratory notes, written just prior to 1609.⁵¹

According to these sources, Dee used considerable amounts of saltpetre and nitric acid, which argues for a Paracelsian influence. Sometimes these were combined with sulphur and its compounds. For example, in Bodleian Library Rawlinson MS D 241, he notes that from 8 June he

⁴⁷ Oswald Croll, *Basilica Chymica* (Frankfurt, 1609), pp. 208-15.

⁴⁸ Croll, p. 209.

⁴⁹ Croll, pp. 211-17.

⁵⁰ See French, pp. 210-16; Fenton, Appendix 2, pp. 308-9. This is a transcription of another experiment undertaken by Dee from 24 July 1581 (ff. 6,7). It concerns the working of silver with aquafortis.

⁵¹ R&W: DM103.

“dyed” vitriol (sulphuric acid) for twenty-two days and worked saltpetre, adding mercury and repeatedly distilling the ensuing chemical mix. He also used repeated quantities of sulphur and marcasite, frequently circulating the products (ff. 2r-4r). Similarly, in Dee’s diary, he records that on 30 August 1594 Walter Mallet left for Toulouse with the fixed oil of saltpetre, presumably having been taught the method of its preparation by Dee.⁵² Comparing Dee’s work with that of Paracelsus in his various medicinal treatises, there is some similarity. One of the most important Paracelsian chemical preparations was the production of potassium arsenate from the fusion of arsenic with saltpetre. Paracelsus had washed the metals with alcohol and water, then heated them with saltpetre which caused the metals to oxidise and become soluble.⁵³ Also, in this context, there exists a strange record of Dee’s preparation of “AER SIMPLEX” in August 1581.

The 29 day after 11 of the klok I did sett 7 oz and a half of pure Ayre for to Circulate in balneo.

(Bodleian Library MS D 241 (13050), f. 8r)

Unfortunately, the experiment is not fully documented, but it may indicate that Dee was attempting to work with the Paracelsian aerial virtue.

Dee also favoured “marcasite” (Bodleian Library MS D 241, ff. 2r, 2v, 3r, 5r), distilling it with sulphur and sulphuric acid (f.5r). (Marcasite is commonly denoted by the symbol of a star). Unfortunately, the name was used by alchemists to describe a wide range of different substances. Genuine marcasite is a mineral form of iron disulphide (FeS_2), having the same composition as pyrites, but with a different crystalline structure as white iron pyrites. In fact, marcasite is simply an immature metallic substance. White marcasite is bismuth, a metal which was attracting considerable attention in the sixteenth century and which was confused with antimony. Marcasite of lead is antimony. The most interesting, though unproveable, interpretation would be to identify Dee’s “marcasite” with antimony, a poisonous semi-metal much used by the Paracelsians.

Paracelsus had given directions for removing the lethal qualities of poisonous minerals and metals in order to render them suitable for homeopathic use. His method involved mixing the poisonous mineral with saltpetre, then pouring the mixture onto a slab of marble and standing it in a cool place. This would become a dough-like substance which required repeated kneading. The Paracelsian alchemist known by the name

⁵² Halliwell, p. 50; Fenton, p. 267.

⁵³ Pagel (1982), p. 276.

of “Basil Valentine” (probably to be identified with his “editor” Johannes Tholde) was a popular source from the 1580s for a potable antimony. This medicinal potion, apparently, was sweet in smell and taste and coloured ruby-red.⁵⁴

At the end of Bodleian MS Ashmole 1486, Dee records that he used a mix of two ounces of marcasite, four ounces of vitriol, common tartar, one ounce of gold and sal ammoniac. There followed much distilling which indicates that he was attempting to dissolve metals in vitriol. Paracelsian remedies against the plague included sulphur and metals in the form of spirit of vitriol, that is, sulphur sublimate. Sulphur derived from vitriol and its salts has narcotic and analgesic properties.⁵⁵

This small selection of items from Dee’s record can only be indicative of his general interests. The most important question arising from these manuscript notes is whether Dee was intending in his laboratory work to produce medicines, or whether he was still in quest of the philosopher’s stone. The latter purpose certainly dominates Kelley’s alchemical practice. Similarly, Dee’s questions to the angels during his spiritual scences in Eastern Europe, as well as the notes in his diary during the time of his collaboration with Kelley, suggest that he was still preoccupied with the traditional alchemical goal of transmutation.⁵⁶ In contrast, Dee’s alchemical diaries show that he had developed an interest in nitric preparations and, possibly, in those involving antimony which indicates some medical intention. Unfortunately, his laboratory notes are limited remains only, scribbles written in haste, and they cannot provide a full picture of Dee’s alchemy. They have to be read against the broader record of his intellectual life.

⁵⁴ For example, Paracelsus on antimony in Sudhoff, I, 3, pp. 275-76. See also J. R. Partington, *A History of Chemistry* (London: Macmillan, 1961), pp. 146-51 and Basil Valentine, *Der Triumph-WagenAntimonii* (Leipzig, 1604). Suchten issued an influential text on antimony see Sudhoff, *Bibliographia Paracelsica* (1894), pp. 280-81.

⁵⁵ Pagel (1982), pp. 87: n. 230, 276-77.

⁵⁶ See Clulee, pp. 203-30; Clucas, “Non est legendum sed inspicendum solum” (1998), pp. pp. 109-32.

CHAPTER FIVE

JOHN DEE'S ALCHEMY OF LIGHT: THE *MONAS HIEROGLYPHICA* AND THE CABBALAH

Paracelsian theosophy was related conceptually to other neoplatonised metaphysical structures, such as the cabbalah, which entered the western philosophical context in the early sixteenth century. The distant ancestor of both the Paracelsian chemical cosmogony of the aerial fire and that of the cabbalistic divine light is to be found in late hellenistic esotericism. The present study will analyse the manner in which the cabbalah, specifically the cosmogenical account in the *Zohar*, provided a theological justification for an "alchemy of light" through its vision of the world's emanation from God by means of his divine will, "Kav", in the form of a beam of light.

Knowledge of cabbalistic texts was dispersed through-out Europe on the expulsion of the Jews from Spain in 1492. A Christian version of the cabbalah was devised by Giovanni Pico della Mirandola (1463-1494) in his *Nine Hundred Theses* (1496), which provided the model for the more detailed version of the German humanist Johannes Reuchlin (1455-1522) in *De Verbo Mirifico* (1494) and *De Arte Cabbalistica* (1517).¹ In the early sixteenth century, cabbalism supported a natural philosophy orientated towards magic. The work of Pico and Reuchlin was publicised by Cornelius Agrippa in his *De Occulta Philosophia* (1533) and further developed by Guillaume Postel, Johannes Pistorius and John Dee. Agrippa was the main source of public information concerning theurgical systems and his account of mystical practices influenced both Paracelsus' theurgy, as well as his theosophical system.

Scholars differ in their accounts of the sources of John Dee's angelic magic and cabbalism, his "Ars Sintrilla". It was Yates who first laid stress on the importance of Dee's theurgic mathematics for the empirical sciences of the seventeenth century. Both Clulee and Clucas considered that a significant influence on the development of Dee's magical practices,

¹ Johannes Reuchlin, *De Verbo Mirifico; De Arte Cabbalistica* (Stuttgart: Frommann, 1964), facsimiles of first editions. See Charles Zika, "Reuchlin's "De Verbo Mirifico" ", *JWCI* (1976): 104-38; Pico della Mirandola, *Conclusiones Nongentae* (1532 ed), pp. 151-64; Gershom Scholem, *Major Trends in Jewish Mysticism* (New York: Schocken, 1973), pp. 244 ff.

particularly on his esoteric linguistics, came from medieval theurgy since he had copies, for example, of Roger Bacon's work on sigils, as well as that of Peter of Abano. Clulee was also inclined to favour Trithemius and Pantheus as additional Renaissance mentors for Dee's occultist linguistics. Sherman, however, has concentrated on the syncretic aspects of Dee's learning, tending to view his magical interests as an almost counter-humanistic enterprise which favoured the medieval concept of "given" esoteric knowledge, instead of empirical experimentation.

Szonyi, on the other hand, has considered a more immediate source for Dee's astral rituals and sympathetic magic in Renaissance neoplatonism and hermeticism. Initially, he had located Dee's interests in the context of Agrippan and Paracelsian astrology, but more recently he has put a case for a direct line of influence from Ficino's astral magic. He has also contextualised Dee's magical cryptograms within the Renaissance quest for the primal language.² In the late Renaissance, an interest in magical cyphers, engraved gems, "angelic" languages, astrological sigils and ritual incantation formed a current of major intellectual significance. Agrippa's magical inscriptions were modelled on the cryptographs of the German humanist Johannes Trithemius (1462-1516). His popular *Steganographia* (1518) was circulated widely in manuscript and it reached John Dee who had copies of it, among other works by Trithemius.³ Agrippa also revived knowledge of the *Picatrix*, an Arabic book of magic, and he publicised the mystical scripts of Peter of Abano, Gerald of Cremona and Georgius Pictorius Villinganus.⁴

But it was the cabbalah which provided the foundation for the semiotic endeavours of the Renaissance magi which reached their peak in the

early seventeenth century.⁵ The cabbalah expounded a theology in which God emanated and continually pervaded the universe in the form of spiritual and natural light. Scholarly authorities consider that many cabalistic ideas originated in North African neoplatonism during the late antique period. The name "cabbalah" (meaning "received tradition") originated in the circles of Rabbi Isaac the Blind in thirteenth century southern France. The full system was developed in Spain in the same years and its effect is found in the work of Meister Eckhart and Ramon Lull. The cabalistic texts are based on the early chapters of the biblical books of *Genesis* and *Ezekiel*, but in the course of the middle ages further ideas were adopted from Christian neo-platonism. These included the trinitarian dialectic of divine manifestation, known as the "Tree of Life". The oldest cabalistic text appears to be the *Book of Formation* or *Book of Creation* (*Sepher Jezirah*) (circa 600 AD) which is a cosmological account. Modelled on the Pythagorean system, it states that the fundamental principles of all things are numbers, letters and sounds. Furthermore, the Hebrew alphabet is said to have been composed by God himself.⁶

Cabbalists described the Hebrew alphabet as being composed out of the divine flame, or light, of God. The central cypher which generated the rest of the letters was "Jod", meaning "flame" and, moreover, the very form of this sign was said to resemble that of a flame. Hence, the cabbalah was offering at its core a metonymic linguistic sign which was not transposable to the Latin alphabet. The similarity in the appearance of other Hebrew linguistic signifiers to their referent fascinated European cabbalists. Thus, in the context of the Renaissance epistemological crisis described by Foucault, the analogical potential of the Hebrew alphabet satisfied the intellectual and emotional need for a signifying mode which would close the increasing conceptual divide between linguistic forms and the physical world.⁷ Consequently, the psychological situation demanded a substitute analogical system which was provided by the cabbalah. As the divine text of God in nature was erased by the epistemic changes wrought by proto-capitalism in northern Europe, so the yearning to recover God's primal words of creation intensified.

² Heinrich Cornelius Agrippa, *Opera*, 2 vols (London, 1600; Hildesheim; New York: Georg Olms Verlag, 1970); Sherman (1995), pp. 12-19. Also Szonyi, "Ars Sintrilla" (1999), passim, and his forthcoming paper in *Renaissance Quarterly*. These and other points of view may be retrieved from the discussions concerning Dee's magic in Clucas (ed), *John Dee* (1999), passim. Compare Szonyi's position on this issue with Clucas (1998), pp. 109-32. Clulee also offers a different analysis of Dee's angelic languages, see Clulee, *John Dee's Natural Philosophy*, pp. 203-5, 212, 219. For Agrippa's influence note that Dee had copies of *De Occulta Philosophia*, see R&W 742, 743, 1118, 1424, B208, B241. He also had Pantheus' treatise R&W: 1437, D16 (British Library Shelf-mark 1033. h. 1(2)).

³ Johannes Trithemius, *Steganographia* (Frankfurt: Mattias Becker; Joannes Bernerus, 1606); A. Gentili, *La Steganografia dell'Abate Trithemio*, 2 vols (Milan: Editrice Kemi, 1980). For Dee's copies of this text see R&W: 218, 359, 622, 646, 678, 1844; other books of magic are found in R&W: 1551-1550, BM13, CM4.

⁴ Agrippa, *Opera*, pp. 532-33, 562-67, 574-607; Vittoria Perrone Compagni, *Picatrix latinus* (Padua: Antenore, 1975); David Pingree, *Picatrix* (London: Warburg Institute, 1986).

⁵ Szonyi, "Ars Sintrilla" (1999), passim. See also the account in Frick, *Die Erleuchteten* (1973), pp. 89-111.

⁶ Scholem (1973), pp. 244 ff and Frick on Eckhart in *Die Erleuchteten* (1973), pp. 128, 162, 240. For the *Sepher Jezirah* see Ithamar Gruenwald, "A Preliminary Critical Edition of *Sefer Yezira*", *Israel Oriental Studies* (1971):132-77 and for details of the sephirothic system see Guillaume Postel (ed. and comm.), *Sefer Jezirah (Paris, 1552)*, edited by Wolf Peter Klein (Stuttgart; Bad Cannstatt, 1994), pp. 89-90, 92-100, 110-11.

⁷ Foucault, pp. 30-94.

The obsessive belief in cabbalism lay in the hope that it would supply an empowering magical system for its initiates, both an assurance of the continued validity of medieval theurgy, as well as its regeneration. An example of the conflict in the 1620s and 1630s generated by the emerging empiricist systems was the battle between the devout Paracelsian and pro-Rosicrucian Robert Fludd and the French mechanicians Pierre Gassendi (1592-1655) and Marin Mersenne (1588-1648), as well as Johannes Kepler (1571-1630). These prolonged and much-publicised debates are some of the best evidence of the scale of emotional investment in late Renaissance analogical linguistics by those who aligned themselves with the concept of the cabbalistic sage.⁸

The power of the late Renaissance esoteric philosopher rested on his ability to manipulate the names of things, since those names were considered to be the essence of the physical form of his subject. The Hebrew alphabet, being the closest to the pristine language of humanity, was the most powerful enabling tool for his proposed deconstruction of the physical world. Since each letter of the Hebrew alphabet had a numerical value, from this fortuity evolved the two computational aspects of the cabbalah known as "gematria" and "notarikon".⁹ With these esoteric tools, philosophers such as Reuchlin, Paracelsus, Pistorius and Postel, found in cabbalism a new justification for the practice of philosophy. Reuchlin, especially, had sought to provide the Renaissance magus with an elite role in society through the practice of cabbalism.¹⁰

For the cabbalist, the secret name of God "YHVH", known as the "Tetragrammaton", was the source of power. Reuchlin turned the original Judaic form of the Tetragrammaton into a Christian sign by placing the Hebrew letter "Shin" at its centre, thereby, devising the form "YHSVH", which located Christ at the heart of the cabbalistic system. It had been Pico della Mirandola in his *Conclusiones* who initially identified the Jewish Messiah of the cabbalistic discourses with Christ.¹¹ Reuchlin's

⁸ For details and bibliography of this argument, see Debus (1977), 1, pp. 256 ff; Thorndike, *M&ES*, 7, pp. 426-64 and Huffman, *Robert Fludd* (1988), pp. 173 ff.

⁹ Szonyi, "Ars Sintrilla" (1999), *passim*.

¹⁰ Charles Zika, "Reuchlin's 'De Verbo Mirifico' (1976): 104-38; Charles Zika, "Reuchlin and Erasmus", *Journal of Religious History* (1977): 223-46. For the psychology of the magus see Frick (1973), pp. 53-56 and his account of the cabbalah on pp. 89-111. Peuckert provides an account of the cultural changes caused by the shifting economic situation in early sixteenth century Germany, see *Die Grosse Wende* (1948), pp. 690-95.

¹¹ Pico della Mirandola, *Conclusiones Nongentae* (1532 edition), pp. 151-64. See Reuchlin on the Tetragrammaton and the name of Jesus in *De Verbo Mirifico* (Stuttgart, 1964 facs. of 1494 ed.), pp. 95-103 and on the Messiah as Metatron and Christ in *De Arte Cabbalistica* (Stuttgart, 1964 facs. of 1517 ed.), pp. 133, 143-55. See also Giulio Busi and Saverio

Christian cabbalah was the source of Khunrath's alchemical theology in the 1590s, while Fludd was so impressed by Reuchlin's conceptual conceit on the name of Jesus that he used it as his primary structural unit in generating his own alchemical universe in the "Microcosm" (*UCH*, 2, 1619) and the *Philosophia Sacra* (1626).¹² Fludd had realised that the location of the letter "Shin", the sign for fire, within the Tetragrammaton had created an intensely concentrated symbol of the cabbalistic theogony of divine light and divine fire.

In fact, the cabbalistic Tree of Life is an emanation of the light, or fire, of God's will. Although the Godhead is transcendent, he appears in his immanent form as the sephiroth "Ayin" which emanates yet another aspect of God as the sephiroth "Ayin Sof" (Eternal) who is the actual Creator-God. "Ayin Sof" withdraws a part of himself in a contraction termed "zimzum" which allows a void to appear. A further aspect of God, the eternal light "Ayin Sof Or", surrounds the void, emanating a beam of light, "Kav", which penetrates to the centre of the void. Divine will manifests itself as ten stages of emanation which are the ten sephiroth composing the Tree of Life. The divine light flows down the Tree of Life in a zigzag form, acting across the three "pillars" into which the Tree is divided. These are commonly interpreted as being Grace in the centre, Mercy on the right and Severity on the left. The first three sephiroth are

"Kether" (Crown)

"Binah" (Understanding)

"Hochmah" (Wisdom)

These are the ones which appear most frequently in Khunrath's alchemical theory. Fludd also prioritised this primal trinity in his account, but his use of the cabbalistic system is far more extensive and detailed than Khunrath's.

Out of a further progression of sephiroth there finally appears the lowest which is "Malkhut" (Kingdom), or the physical universe.¹³ Since the whole creation is accomplished by means of a beam of light which is God himself, the universe exists in a monistic unity with him.

Campiani (eds), *Johannes Reuchlin L'Arte Cabbalistica* (Firenze: Opus Libri, 1995), pp. 54-68, 89-95, 185-92. On Pico and Reuchlin see also Zika (1976) and Frick, *Die Erleuchteten* (1973), pp. 106-9. Guillaume Postel also makes the same identification in his commentary on the *Sefer Jezirah* in the 1552 edition, see *Sefer Jezirah (Paris, 1552)*, edited by Klein (1994), pp. 143-75.

¹² Fludd, *UCH*, "Microcosm", 2 (1621), Sect I, pp. 28-33.

¹³ See Lachower and Tisby (1989), 1, pp. 268ff for an account of the process of emanation and also Frick (1973), pp. 97-101, pp. 319-22.

John Dee by no means applied the whole of the original cabbalistic system in his *Monas Hieroglyphica* and its theological implications are largely absent from his own design. Dee was more concerned with the specifics of the alchemical process and he used the cabbalah to weave an elegant demonstration of his more limited pantheism concerning the relation of microcosm to macrocosm. The cabbalah also served to display his own intellectual prowess, as well as his claim to superior rank as a magus of the highest order. He seems to have relied primarily on Reuchlin, Paracelsus and Postel for his knowledge of cabbalism, acquiring a copy of Reuchlin's *De Verbo Mirifico*, as well as works by Postel. Moreover, Dee's collection of Paracelsian texts included the theosophical and cabbalistic treatises. He also had a copy of Pico della Mirandola's *Conclusiones Nongentae*. Surprisingly, the Hebrew texts in his library were not cabbalistic, providing mostly grammatical information and this was also the case with his "Syrian" and "Chaldean" books. He did not have a copy of the *Zohar* itself, nor of the *Sepher Jezirah*. In fact, Dee may have gained some of his information on the cabbalah from an older medieval source, *De auditu cabbalistico* of the late thirteenth century which is spuriously attributed to Ramon Lull. It has to be recognised that Dee's cabbalistic system is based on a variety of models and that his use of the original Hebrew texts may have been limited. His other sources would have included non-cabbalistic material found in the *Hermetica* and in Ficino's writings.¹⁴

In the *Monas Hieroglyphica*, Dee applied only the general concepts underlying cabbalism, specifically the manipulation of cyphers, translating its linguistic modes into his own astrological, Euclidean and alchemical syntax. Dee stated that he was already planning his treatise at a time when he was still writing the *Propaedeumata Aphoristica*. Dee's hieroglyphic was drawn in the form of a hand-glass, recalling his own magic mirror, used in scrying (fig. 17).¹⁵ The *Monas Hieroglyphica* was eventually published in Antwerp on 31 March 1564 and it was reprinted in the *Theatrum Chemicum* (Strassburg: Lazarus Zetzner, 1609) which ensured a wide dispersal of its influence in the early seventeenth century.¹⁶

¹⁴ For Dee's sources see R&W Reuchlin 1043, B25; Postel 1619, 1622, 1623, D18; Hebrew, Syrian and Chaldean texts 1558-1586, 1591, 1594, 1601, 1612, 1845; Lull "de auditu cabbalistico" 1419, 1518; Ficino *De triplici vitae* 779, Ficino's translation of Plotinus 108, *Opera* 204, *Theologia Platonica* 893; Pico della Mirandola *Conclusiones* 190, B121.

¹⁵ Schumaker, pp. 162-63.

¹⁶ C. H. Josten, "A translation of John Dee's 'Monas Hieroglyphica' (Antwerp, 1564)", *Ambix*, 12 (1964): 84-221. The Latin version is also found in the *Theatrum chemicum*, 2, pp. 192-215.

Dee's Monas is conceived as being a linguistic alchemy, since by manipulating this sign the magus can control nature. Moreover, the pragmatic mechanician who was a large part of John Dee's character intended that his Monas should have a practical use for alchemists. Working with impure substances, poor quality glassware and lacking thermometers, the alchemists could only gauge their progress by relying on their senses of smell, touch and taste. One saving grace for them was the fact that most of the traditional alchemical substances belonged to Group V of the Periodic Table of the Elements. These included the sulphides and nitrates, which reliably produce spectacular evidence of chemical change, thereby providing an encouraging incentive for the alchemist.

To these problems of interpretation and procedure, Dee's Monas offered more than a guide. Within his union of catoptrics, astrology and cabbalism, Dee perceived distinct benefits for alchemy, ensuring precision in correlating the effects of the heavens with the chemical process. Yet, in the *Monas Hieroglyphica* there is relatively little mention of specific chemistry. Instead, Dee uses the planetary rays to perform his alchemical operations, defining his method as being an astronomical alchemy. In this idea he was clearly influenced by Paracelsus' gnosticism in the *Astronomia Magna*, as well as by his theory of the illuminated imagination in the astral body communicating with the celestial macrocosm. It is essential to note that the graphic form of Dee's Monas (figs. 17, 18) differs entirely from the diagrammatic plans of astronomical star-charts, or of Lullian figures (figs. 4-7).¹⁷

Dee's Monas arose out of the context of the sixteenth century interest in devising secret cyphers which would act as an indexical bond between the heavenly and the human spheres.¹⁸ According to Szonyi, Ficino's talismanic models in *De Triplici Vitae* were a direct source for Dee's Monas and his concept of an astronomical alchemy. Szonyi has indicated the similarity between Ficino's and Dee's astral magic, in particular, their concept of the seven planets being grouped in two distinct families, thus, enabling the play of conjunctions and oppositions between the various members of the two alliances. There are also, as Szonyi demonstrates, correspondences between the numerology employed by Ficino in his commentary on Book VII of Plato's *Republic* and Dee's geometrical numerology in the *Monas Hieroglyphica*. Ficino's deployment of the concepts of squaring and triangulating planetary influences also re-appears in Dee's cabbalistic system. Moreover, Dee, like Ficino, uses the numer-

¹⁷ Pagel, "Paracelsus als 'Naturmystiker'" (1979), pp. 55-57, 89-99; Clulee, p. 211.

¹⁸ Clulee, pp. 81-96.

ology of the Latin and Greek alphabet and also optical geometry.¹⁹

Dee's mathematical approach to natural philosophy urged him to favour concise, visual structures. In fact, the Monas is the ancient, astrological sign for mercury, with two half-moons added to the base of the cross. This form may have been inspired by the diagram of Pantheus' cabbalistic universe in the *Voarchadumia* (fig. 8) which shows the sign for mercury at the heart of the system with a reversed crescent-moon at its feet. Dee's copy of this text is copiously annotated and he has meticulously worked through all the numerology of Pantheus' system.²⁰

In the rhetorical structure of his theorems, Dee adopted the model of Euclid's *Elements of Geometry*. Both Clulee and Walton have thoroughly analysed the cabbalistic operations of the Monas which was designed, on the basis of "notarikon" and "gematria", as a cypher facilitating esoteric computations. Clulee has concluded that Dee intended the Monas to be "a new form of writing that is meant to mirror nature because it reflects the geometrical and numerological principles inherent in creation". The Monas is, thus, an alphabet, a lexicon of nature, as well as a "kabbalistic" grammar of "notarikon, tsiruf, and gematria by which these elements are manipulated". Clulee argued that the Monas served to "constitute a discourse or text that reveals and illuminates the alchemical nature of the universe".

what [Dee] gives in the *Monas* is essentially a series of examples of how his hieroglyphic writing embodies alchemical principles and disclaims giving a complete elaboration of his new discipline of alchemy.²¹

The cypher of the Monas is a deconstructive device in which the signifier is unstable, constantly mutating into other forms in order to follow the traditional stages of the alchemical process. Unlike traditional alchemy, however, Dee's procedure dismantles the very fabric of the universe. For example, in Theorem XII, he analyses the conventional symbols of the five planets, relating their graphic design to that of the signs for the Sun, Moon and Aries (fire).

All of them are indeed composed of [elements derived from] the symbols of Moon and Sun and [from] the hieroglyphic sign(s) of the elements and of Aries ... Mercury. You see how lunar it is²²

¹⁹ Szonyi forthcoming in *Renaissance Quarterly*. An analysis of Ficino's numerology is provided by Allen (1994), pp. 106, 130-34, 138-42.

²⁰ R&W: 1437, D16 (British Library Shelf-mark 1033. h. 1(2)).

²¹ Michael Walton, "Geometrical Cabala", *Ambix* (1976): 116-23; Clulee, pp. 89-95, quotes from pp. 105-6.

²² Josten, pp. 162-63.

And in Theorem XIII, Dee enquires,

Is not, then, the mystical sign of Mars produced from the hieroglyphs of the Sun and Aries? With the doctrine of the elements included to some extent? And is not, I ask, the sign of Venus produced by a fuller unfolding of the Sun and the elements. These [two] planets, therefore, have regards to the solar revolution and to the work of rehabilitating [metals] by fire, in whose progress there becomes at length apparent that other Mercury ... He is ... that most famous Mercury of the philosophers²³

In Theorem XII, Dee explains how prime matter may be imprinted by the astral virtue of Mercury without any effort on the part of the alchemist.

the purest magic spirit [sc. Mercury] will carry out the work of albification in place of the Moon ... if by his spiritual virtue, he may, without words, speak hieroglyphically ... for about the length of an average day, introducing and impressing into the very pure and simple earth prepared by us those four geogamic figures [here depicted] or, in their stead, that other figure [also shown here]²⁴

The Monas is constructed from a circle and two straight lines which take the form of a cross beneath the circle (fig. 17). The point at the centre of the circle represents the earth and revolving around it are the Sun (the circle), the Moon and the rest of the planets.²⁵ In Dee's Pythagorean geometry, the rectilinear cross represents both the ternary, as well as the quaternary. The ternary consists of two straight lines and one point, while the quaternary is four straight lines, including four right angles. The four elements are the four straight lines emerging from the point.²⁶ Dee explains that the two half circles at the bottom of the cross represent Aries, or fire. Thus, the Monas contains the power of the three levels of creation, corresponding to the cosmic alchemical egg, the prime matter which contains the All.²⁷

The most elaborate Euclidean dissection of the Monas occurs in Theorem XXI in which the sign for the Monad is turned upside-down, permitting new relationships to be established between the Moon, Sun, Aries and the other planets (fig. 18). Dee implies that there exists an even more awe-inspiring relationship between the alchemical art of fire, represented by the sign of Aries, and the astronomy of the Monas. In this instance,

²³ Josten, pp. 163, 165.

²⁴ Josten, pp. 162-63.

²⁵ Josten, pp. 103-4, 107-8.

²⁶ Josten, pp. 107-8.

²⁷ Josten, pp. 177-79.

Dee is inferring the use of cabbalistic graphology.

Yet in the hands of learned men and literati there resides yet a stronger and more unfailing motive for shaping these letters ... I at least advise and urge them to elicit more carefully now what was the fire of Aries of the first triplicity, what our equinoctial, [and] who was responsible for allowing the Sun to be raised to exaltation above its ordinary grade.²⁸

Earlier alchemy had occasionally played such games of visual semiotics, but never with such economy and precision. In fact, the Monas is a type of emblem, a poetical conceit, a condensation of a discursive text into a unique sign.

The emblem was a popular semiotic game in learned and courtly circles of the Renaissance, being erroneously identified with "Egyptian hieroglyphics". The Renaissance emblem is first encountered in the humanistic circles of mid-fifteenth century Florence, Ferrara and other north Italian courts. In Venice there appeared one of the most famous Renaissance emblematised stories, *The Dream of Poliphilo*, issued by the foremost publisher of Greek and hellenistic writings, Aldus Manutius, in the late fifteenth century.²⁹ The real source of these symbols was a late hellenistic text written by Horapollo of Nilous who spuriously claimed it to be a dictionary of ancient Egyptian hieroglyphics.³⁰ It was nothing of the kind since Horapollo had invented his own method of exegesis. The rediscovery of Horapollo in the mid-fifteenth century produced a rage for both the original Egyptian artefacts, as well as for his system of reading such imagery which was used as a model to create contemporary devices. Renaissance emblems were intended to be personal insignia, demarcating a particular quality of their patron. These motifs appeared on Renaissance medals, coinage, portraiture and in many printed emblematic compendia through into the sixteenth century, some of the most popular being Andrea Alciatus' *Emblematum liber* (Milan, 1522) and Sambucus' (Johannes Zsambok) *Emblemata* (Antwerp, 1556). The visual devices were accompanied by a cryptic motto and a textual commentary.³¹

Although Dee's Monas belongs to this humanistic tradition of pictorial invention, his own hieroglyph has a different semiotic structure from that of the conventional Renaissance emblem. The difference resides not in

²⁸ Josten, pp. 194-95.

²⁹ Linda Fierze-David, *The Dream of Poliphilo* (New York: Pantheon, 1950).

³⁰ Alexander Turner Cory, *The Hieroglyphics of Horapollo Nilous* (London: William Pickering, 1840).

³¹ Dee had copies of works by Sambucus including his emblem book see R&W: 720, 964.

the fact that Renaissance emblems are figural, whereas Dee's Monas is diagrammatic, but in their distinctive semiotic functions. Horapollo's signs operate as metaphors or symbols, that is, the visual signifier rarely mirrors its conceptual content. Consequently, most of his imagery could not be decoded without the explanatory text. Renaissance emblems were intended to be a cryptic language, decipherable only by members of elite circles. The emblem's often bizarre components were an attempt to transpose a verbal phrase into its equivalent visual elements, since this was thought to be the authentic mode of the ancient Egyptians.³²

In contrast, Dee's Monas was intended to be an index and, in this function, it was probably unique among Renaissance emblems, since it not only symbolised the process of transmutation, but displayed that process in its very form. In other words, Dee believed that the form of his Monas was identical to its physical referent, for, as the alchemist worked through the geometrical proofs of the Monas, he simultaneously engaged in "real" alchemy in a very special way. Through the Monas, in fact, the alchemist operated the occult powers of the heavens themselves, forcing the stars to enact transmutation without involving himself in practical toil.

Dee explained the difference between the indexical function of the Monas and his earlier practical methods, stating these had been crude in comparison with his new system in which the Monas replaced the mirrors of conventional catoptrics. The Monas, effectively, could be used to make a perfect mirror, without the previous mental and mechanical tedium. In this concept, Dee may have been influenced by Ficino's account of the manner in which the magus could turn his own spirit into a theurgical "mirror", through the esoteric application of optical geometry and Pythagorean ratios.³³ As Dee explained in the introduction to the *Monas Hieroglyphica*,

the optician will confound the stupidity of his art; he had worked in all manner of ways to shape a mirror into the parabolic line of a (suitably rotated) conical section, so as to attack any matter (liable to fire) with that incredible heat (issuing) from the rays of the Sun; yet here a line is revealed as resulting from a trigonal section of the tetrahedron after whose shape, when rendered three-dimensional, a mirror may be formed which ... can reduce any stones or any metal to, as it were, impalpable powders by the force of ... heat.³⁴

³² Karl Giehlow, "Die Hieroglyphenkunde des Humanismus in der Allegorie der Renaissance", *Jahrbuch der Kunsthistorisches Sammlungen der Allerhochsten Kaiserhauses*, 32 (1915); 1-232.

³³ Allen (1994), pp. 97-99.

In Theorem XIV, Dee explained that the philosopher's stone was "nourished in Lemnian earth by lunar and solar rays which exert a singular influence around it".³⁵ Theorem XIX refers more specifically to the operations of the celestial virtues in alchemy.

The analysis by fire of all things corporeal shows in its effect that Sun and Moon infuse their corporeal virtues into all inferior bodies that consist of elements in a far stronger manner than do all the other planets, by pouring out the aqueous moisture of the Moon and the fiery liquid of the Sun³⁶

The alchemical theory of the *Monas Hieroglyphica* emerges from a Paracelsian cabbalistic context since by the 1560s Dee had redirected his studies into the field of hermeticism which included Paracelsian alchemy. Despite this evidence, Debus has argued for a distinction between Dee's ideas and those of Paracelsus on the grounds that Dee's treatises were based on Pythagorean and Euclidean mathematical principles and had little in common with Paracelsian chemical theory.

[if] John Dee exemplifies one way in which Hermetic, mystical, mathematical and alchemical strains were blended in Renaissance natural philosophy, Paracelsus may be chosen as a very different example... both claimed that their own interpretation of alchemy or chemistry would lead to a new understanding of nature.³⁷

Debus, however, considerably underestimated the Paracelsian influences on Dee. An argument against his view is Szonyi's demonstration of Dee's use of Paracelsian astral magic.³⁸ In addition, Roberts and Watson have established that Dee's interest in Paracelsus began earlier than the 1580s.³⁹ There is also a further argument against Debus' characterisation of Paracelsus and Dee as being different types of magi in the fact that their followers occasionally unified their respective practices in a single conceptual structure which incorporated both Paracelsian chemistry and Pythagorean geometry.

The most notable example of this is Gerhard Dorn (flourished circa 1566-84) who was the principal apologist for Paracelsus in the late sixteenth century. He employed Euclidean geometry to present his own

Paracelsian alchemy in the *Monarchia triadis* (1577).⁴⁰ Nonetheless, in their basic recourse to Euclidean theorems, the similarity between Dorn and Dee probably ends, since Dorn's geometry contrasts with Dee's in several important respects. The prime difference is that Dorn's structures are conventional Euclidean symbols, rather than hieroglyphs, nor does he employ cabbalism. Thus, in semiotic terms Dorn's geometrical signs do not reify their conceptual content, functioning instead as a metaphorical system which represents practical alchemy by means of abstract signifiers. There is a closer comparison between Dorn's system and that of other metaphysical geometers in the early seventeenth century, such as Fortunatus of Padua who used Euclidean theorems to prove the truth of the Christian faith.⁴¹ In contrast, Dee believed that the operation of his *Monas* was contiguous with reality (a metonymic, or indexical relationship), asserting that the manipulation of the *Monas* was practical alchemy, rather than its symbolic substitute. By means of the universal language of cabbalism, Dee thought that he had created a uniquely potent sympathetic magic which would eliminate, at a stroke, the confusions in traditional alchemical discourse.

Another natural philosopher who located Dee's optics within a Paracelsian context was the alchemist and cosmologist Nicholas Hill who had originally been a member of the retinue of Henry Percy, Earl of Northumberland where he would have encountered the direct legacy of Dee's influence, as well as the optical interests of that circle. In his *Philosophia Epicurea* (Paris, 1601), Hill discussed the astral influences transmitted by light-rays, relating this effect to Paracelsian alchemy. He stated that the extraction of the elixir of life and the transmutation of metals were a divine process equivalent to the emanation of the second person of the Holy Trinity from the Father. He believed that light was the impression of God in nature and that it gave both form and life to matter.⁴²

Besides Dee's there was another important influence on the adaptation of optical theory to alchemy in the work of Giambattista della Porta (circa 1535-1615), who was the first to provide an illustration of solar rays

³⁴ Josten, p. 131.

³⁵ Josten, p. 167.

³⁶ Josten, p. 181.

³⁷ Debus (1977), 1, pp. 44-46, quote from p. 45.

³⁸ Szonyi, "Ars Sintrilla" (1999), passim.

³⁹ R&W, pp. 41-45.

⁴⁰ Gerhard Dorn, "Monarchia Triadis" in Paracelsus, *Aurora Thesaurusque Philosophorum* (Basel: Palma Guarini, 1577), pp. 65-127. John Dee had copies of Dorn's work including the *Monarchia* of 1577: R&W: 1512. For an analysis of Dorn's theory see Thorndike, *M&ES*, 7, pp. 630-32.

⁴¹ Fortunatus (Patavino) monachus et Praefato Acad, Iustinae, *Decas Elementorum Mysticae Geometriae* (Padua: Petrus Paulus Tozzi, 1617).

⁴² Jean Jacquot, "Harriot, Hill, Warner and the New Philosophy" in Kargon (ed.), pp. 107 ff; Grant McColley, "Nicholas Hill and the philosophia epicurea", *Annals of Science* (1939): 390-405.

being employed in the process of distillation (fig. 19). Della Porta published his *Magia Naturalis* in 1558, with a second enlarged edition in 1589 (Naples: Horatius Salviandus), both of which were very popular and were frequently reprinted. The earlier edition consisted of four books on magic, magnetism and physics, including the first published description of the "camera obscura", while the 1589 *Magia Naturalis* comprised twenty books, examining optics, astronomy, geometry, architecture and cryptography, among a wide range of other subjects. The second edition also provided an illustration of the technique of distillation by means of the sun's rays (Bk. X, Ch. IV), although this method did not involve catoptrical apparatus which was described in a separate section, unrelated to alchemy.⁴³ In fact, there was no mention of either the use of light, or of catoptrics in the section concerning the transmutation of metals in which della Porta merely provided a traditional account of medieval alchemical theory (Bk. V).⁴⁴ In isolation from the rest of the treatise the section *De Distillationibus* was published in Rome in 1608 and reprinted by Lazarus Zetzner (Strassburg, 1609), who also included an illustration of distillation by means of the sun's rays.⁴⁵ Della Porta relied on German and Italian medical chemistry, such as Hieronymus Brunschwig (circa 1450-1533), *Liber de arte distillandi* (1500-1512) and Pierandrea Mattioli (1500-1577) "De ratione distillandi aquas" in his *Commentarii a Dioscoride*, Venice (1544). Another influence was Conrad Gesner in his *Thesaurus Euonymi Philatri* (1555).⁴⁶

It was Khunrath who related della Porta's catoptrics specifically to alchemy, mentioning him in the *Amphiteatrum* of 1609 as well as in *De Igne Magorum* (circa 1602-1604). Subsequently, Athanasius Kircher (1602-80) claimed to have invented distillation by means of catoptrics, illustrating the process in his *Mundus subterraneus* (Amsterdam, 1665) (fig. 20).⁴⁷ His

claim for primacy has to be disregarded since by this date the catoptrical distillation process was well-established. For example, there exists an earlier drawing of similar apparatus in the Mellon collection of occult and alchemical manuscripts (circa 1625), belonging to an anonymous Italian text on distillation.⁴⁸ In addition, there are other seventeenth century illustrations which depict alchemical catoptrics, for example, Mylius in his pictorial chronology of famous alchemists depicts "Ademarus philosophus" reflecting the sun in a mirror (*Opus Medico-Chymicum*, Frankfurt: Lucas Jennis, 1618). Also, later seventeenth practical chemists are sometimes shown employing the sun's rays to calcinate antimony, such as an image in Nicasiaus le Febure's *A Compleat Body of Chemistry* (London, 1670).⁴⁹

Other related seventeenth century texts and illustrations such as those of Stefan Michelspacher, Jacob Boehme and Isaac Newton will be considered in relation to Khunrath's metaphysics of light and his catoptrical practice of "irradiating" alchemical prime matter.

⁴⁸ Lawrence C. Witten II and Richard Pachella (eds), *Alchemy and the Occult. The Collection of Paul and Mary Mellon*, 3, (New Haven: Yale U.P., 1977), pp. 333-36, esp p. 335.

⁴⁹ I am grateful to Professor R. I. McCallum of Edinburgh for drawing my attention to this engraving.

⁴³ Giambattista della Porta, *Magiae Naturalis Libri Viginti* (Naples: Horatius Salviandus, 1589), pp. 179-99, esp pp. 182-83. See also Bk XVII, pp. 259-86 "De catoptrici imaginibus". His ideas are discussed in Ronchi, pp. 78-87. Note that Dee's library included della Porta's work see R&W 1583 catalogue: 613 "de furnibus", 776 "Magia Naturalis". For Dee's copy of the first version of the *Magia Naturalis* see R&W: 776.

⁴⁴ Della Porta (1589), Bk. V, pp. 106-16.

⁴⁵ G. B. della Porta, *De distillationibus* (Lazarus Zetzner: Strassburg, 1609) esp pp. 46-49.

⁴⁶ See Debus (1977), 1, pp. 111-12, 115-17 and n. 111.

⁴⁷ Athanasius Kircher, *Mundus Subterraneus* (Amsterdam, 1665), 2, p. 241; Martha Baldwin, "Alchemy and the Society of Jesus in the 17th-C", *Ambix*, (1993): 52. Kircher's treatise on light, *Ars Magna Lucis et Umbrae* (Rome, 1646; Amsterdam, 1671) examines eclipses, comets and astrological influences, as well as optical phenomena such as burning-mirrors.

CHAPTER SIX

JOHN DEE'S CONCEPTUAL ARCHITECTURE AND "ZOGRAPHIE" IN AN ALCHEMICAL CONTEXT

Dee's *Mathematicall Preface*, written to accompany Henry Billingsley's translation of Euclid (1570), had a special relevance for illustrators of alchemical texts, due to his references to an esoteric drawing-practice called "zographie". This was a Pythagorean-based, geometrical system which had theurgical implications. Although Dee had composed the *Mathematicall Preface* primarily with a practical intention, he could not help but hint at another, more profound, wisdom which he termed "Archemastrie", thereby alluding to theurgy, alchemy and prognostication.

According to Yates, Dee considered mathematics in three distinct aspects, pragmatic (mechanical problem-solving), conceptual (logic), spiritual (Ideal form). He used the term "mathesis" to describe the esoteric aspects of mathematics, considering that practical mathematics and logic could not fulfil the highest goals of the natural philosopher which could be attained only by means of "Archemastrie".¹

This Arte, teacheth to bryng to actuall experience sensible, all worthy conclusions by all the Artes Mathematicall purposed, & by true Naturall Philosophie concluded: & both addeth to them a further scope, in the termes of the same Artes (f. Aiiijr)

... And though some Artes, have in them, *Experiences*: but neither, all, that they may: nor yet sufficiently, and to the utmost, those, which they do, There, then, the *Archemaster* steppeth in, and leadeth forth on, the *Experiences*, by order of his doctrine *Experimentall*, to the chief and finall power of Naturall and Mathematicall Artes, ... this Art is no fantastick Imagination ... Under this cometh *Ars Scintrilla*, by *Artephius* (f. Aiiijv)

Within this cloud of obscure insinuation, Dee refers to the use of "Ars Scintrilla", prognostication or "scrying" by means of mirrors and crystals. He may also be recalling the use of catoptrics in alchemy, since Artephius was a noted alchemical author.²

¹ See Frances A. Yates, *The Theatre of the World* (London: Routledge and Kegan Paul, 1969), pp. 42ff.

² Szonyi, "Ars Sintrilla" (1999), passim.

But the chief Science, of the Archemaster, ... is an other
(as it were) OPTICAL Science (f. Aiiijv)

Dee interrupts himself by saying that, unfortunately, he has run out of time and must desist from his account, but perhaps he would write more about this optical art at some future date. In addition to Dee's brief references to occultist practices, even his more rationalistic explanations of mathematics in the *Mathematicall Preface* would permit a theurgical interpretation. In fact, there were significant implications for magic and alchemy in his discourse on Pythagorean geometry, classical architecture and single-point perspective.

The development of early Renaissance architecture had been profoundly influenced by the discovery of the complete text of Vitruvius' treatise on architecture (f. Aiiijr). During the early Florentine Renaissance Vitruvius provided the basis for Alberti's *De re aedificatoria* (1452: published 1485). The works of these two authorities are found in Dee's library.³ The aesthetic programme of both Vitruvius and Alberti had been devised on the model of Pythagorean geometry and mathematics, specifically on the theory of commensurate proportions based on the ideal human figure. A neoplatonic element was contributed to Renaissance art-theory by Ficino's notion of an invisible, ideal architecture.⁴ He believed that exact adherence to Pythagorean ideal ratios would generate within the visible shell of a physical building another invisible form belonging to the higher Intellectual Realm. Ficino had formulated this idea after reading the neoplatonic commentary of Proclus on Euclid.⁵

Comparable ideas to those of Vitruvius and Alberti were developed by other theorists who similarly related the mathematical proportions and geometry of architecture to those of the human body. The most complex of these was the mathematical system invented by the Italian artist Piero della Francesca (circa 1420-92) for the depiction of the perspective of the human-body. Although Dee's library lacked both della Francesca's *De prospectiva pingendi* and his *De quinque corporibus regularibus*,⁶ he did acquire several other Renaissance texts on geometrical mathematical ratios, such

³ Vitruvius, *On Architecture* (London; New York: Loeb Classical Library, 1934); Leone Battista Alberti, *De re aedificatoria, l'architettura* (Milan: Il Polifilo, 1966). For Dee's copies see R&W: Vitruvius 664, 822, 2153, B12; Alberti 1553 edition, 2152.

⁴ G. L. Hersey, *Pythagorean Palaces* (Ithaca: Cornell University Press, 1976).

⁵ Rudolf Wittkower, "The changing concept of proportion" in his *Idea and Image* (London: Thames and Hudson, 1978), pp. 109-23; Rudolf Wittkower, *The Architectural Principles of Humanism* (London, 1952); Erwin Panofsky, *Idea* (New York: Harper and Row, 1968), pp. 47-126; for Dee's copy of Proclus see R&W: 266, 1789.

⁶ Piero della Francesca, *De prospectiva pingendi*, 2 vols (Florence: Sansoni, 1974).

as *De divina proportione* (Venice, 1503) by della Francesca's pupil, Luca Pacioli (1445-circa 1510).⁷ Other treatises on proportional physical ratios in Dee's collection included Pomponius Gauricus' *De Sculptura* (Florence, 1504).⁸ Dee also had several copies of the writings of Albrecht Durer (1471-1528) which were the most influential sixteenth century texts on the rational proportions of the human-figure in painting, namely his *Unterweisung der Messung (Instruction in Measurement)* (1525) and his *Vier Bucher von menschlicher Proportion (Four Books on Human Proportions)* (1528).⁹ Dee also had a copy of *De harmonia mundi* (Venice, 1525) by the architect Francesco di Giorgio Martini (1439-1502), in which he had related the proportions of the human-body to those of the macrocosm. His ideas were probably the source of Agrippa's similar account in *De Occulta Philosophia*.¹⁰

In Renaissance art-theory, the same aesthetic system governed the structure of both organic and inorganic ideal form, the depiction of the human-form being related to that of spatial geometry. In *De pictura* (1435), Alberti had applied the geometrical rules of optics ("perspectiva naturalis") to the art of painting in order to produce the illusion of a three-dimensional space ("perspectiva artificialis").¹¹ Alberti had imagined rays of light being projected by the eye in the form of a pyramid (fig. 2). He then constructed their mirror-image on the canvas in the form of a reversed pyramid with its apex located in the middle of the painting, which was the "vanishing point" absorbing all the orthogonal lines of the drawing (fig. 1).¹²

Dee did not have a copy of Alberti's treatise on painting, only his work on architecture, but he produced his own treatise on perspective which is found in British Library MS Cotton Vitellius C. VII. Durer is briefly mentioned in the text as having been the main exemplar (f. 16r). Dee states that he has explained his ideas in a manner suitable for use by artisans, from artists to all types of mechanicians (ff. 15r-25r). He explains the construction of the vanishing-point by means of "quadratura" (f. 17v ff) which is illustrated by two incomplete drawings of the

⁷ Luca Pacioli, *De Divina proportione* (Vienna: C. Graeser, 1896). This was in Dee's collection see R&W, Pacioli 1509 edition, 303.

⁸ Pomponius Gauricus, *De sculptura* (Geneva, 1969). For Dee's copy see R&W 468, B9.

⁹ Albrecht Durer, *The Painter's Manual* (New York: Abaris, 1977); Albrecht Durer, *Writings of Albrecht Durer* (London, 1948); Panofsky, *Idea*, pp. 121-26. For Dee's copies see R&W: 38, 1799, B55, B197.

¹⁰ Robert Papini, *Francesco di Giorgio architetto* (Florence: Electa Editrice, 1974). Dee's copy is R&W: 221, B91. See also Agrippa, *Opera (1600)* (Hildesheim; 1970), Bk. II, Chs 23-27, pp. 226-35.

¹¹ Grayson (1972); White (1957), pp. 113-34, for Alberti see pp. 121-26.

¹² Ackerman (1978), pp. 1-27.

"pavimentum diminutionis" (ff. 18v, 19r) (figs. 21, 22). This is a drawing of a floor composed of square paving-stones whose spatial disposition obeys the geometrical rules of single-point perspective. The illusory effect of diminishing form in space is produced by the artist in two stages (fig. 1). First, he predetermines the position of the vanishing-point and the orthogonals on the surface of the painting. Then he draws a set of intersecting lines across the paper from points at both sides of the frame, representing the viewing-point of the spectator. It is these lines which determine the rate of diminution of the space and, therefore, its apparent depth. Finally, by drawing parallel lines horizontally across the network of inter-sections, the "pavimentum diminutionis" is created.¹³

In the *Mathematicall Preface* Dee's perspective theory is intimately connected with his view of architecture as the essence of the arts and sciences. Yates has argued that he was ahead of his time in England due to his interest in classical and Renaissance theories of ideal geometry and ratio. In fact, she claimed that his references to Vitruvian perspective in the *Mathematicall Preface* initiated the classical revival in architecture prior to the work of Inigo Jones.¹⁴ Influenced by Vitruvius' and Alberti's aesthetic system, Dee believed that architecture united the spiritual and material worlds, the heavens and the earth. He concurred with Alberti that the architect should be well versed in all the arts and sciences, including natural philosophy, since there were deeper issues involved in the practice of architecture than merely the problems of physical construction. Dee, in fact, regarded architectural theory as a speculative philosophy, citing Vitruvius on the intellectual and spiritual stature of architecture as the most noble art-form.

Architecture, is a Science garnished with many doctrines & diverse instructions: by whose Judgement, all workes, by other workmen finished, are Judged ... (f. diijr) [Vitruvius] geveth reason, orderly, wherefore all these Artes, Doctrines, and Instructions, are requisite in an excellent Architect. (f. diijv)

Therefore, the architect needed to know history, philosophy, music, physics, languages, painting, geometry, arithmetic and astronomy. A musical education especially provided a conceptual foundation for his practical deployment of Pythagorean measure, weight, number and proportion.

¹³ F. M. Lund, *Ad Quadratum* (London, 1921); Kubovy (1986), pp. 17-31.

¹⁴ Yates (1969), pp. 112-35.

I count, here, *Architecture*, among those *Artes Mathematicall*, which are Derived from the Principals ... the *Architect* ... remaineth the Demonstrative reason and cause of the Mechaniciens worke: in Lyne, plaine, and Solid: by *Geometricall*, *Arithmetically*, *Optically*, *Musically*, *Astronomically*, *Cosmographicall* by all the former Derived *Artes Mathematicall*, and other Naturall Artes (f. diijr)

The architect also had to understand "optics" (perspective) by means of which

the Lightes of the heaven, are well led, in the buildings: from certain quarters of the world (f. diijr)

But, such practical aspects were not Dee's main interest, since it was the Pythagorean concepts involved in the design of a building which, he argued, were the salient quality of architecture's unique status among the arts. He quotes Alberti in his *De Re Aedificatoria* that architecture is reducible to abstract line drawing.

The whole Feate of Architecture in buildyng, consisteth in Lineamentes, and in Framyng. And the whole power and skill of Lineamentes, tendeth to this: that the right and absolute way may be had, of Coaptyng and joyning Lines and angles ... Lineamente, shalbe the certaine and constant prescribyng, conceived in mynde: made in lines and angles: and finished with a learned minde and wyt (f. diiijr)

Therefore, architecture was a conceptual art-form, for its theoretical principles were derived from Pythagorean geometrical mathematics.

And *Plato* affirmeth, the *Architect* to be *Master* over all, that make any worke. Whereupon, he is neither Smith, nor Builder: nor, separately, any Artificer (f. diiijr)

The lofty intellectual and spiritual stature awarded by Dee to architecture may have had important consequences for alchemical illustration in the early seventeenth century.¹⁵ In many late sixteenth and early seventeenth century alchemical engravings the artists used motifs from the classical canon to signify the higher ontological levels of the cosmos (frontispiece and fig. 41).

Dee placed great emphasis on the intellectual status of drawing, whether in relation to architecture, or in the depiction of the human figure. He invented a special name for idealised figure-drawing which he called "anthropographie", involving the depiction of human proportions

¹⁵ Szonyi (1998) presents a related argument on the role of architecture in 17th-C alchemical illustration.

according to “the Arte of Perspective” (f. ciiijr). Dee contextualised this type of graphic design within hermeticism, commending Agrippa’s *De Occulta Philosophia* which depicted the human-body as a model of the Pythagorean cosmic order.

Dee was implying that the application of the single-point perspective system, whether to the human-figure, or to architectural space, served to align the human-being with the macrocosm. Thus, Pythagorean geometry not only had an intellectual and aesthetic role in the art of drawing, but also a spiritual and magical function. Hence, Dee’s account of “Zographie” prioritises its conceptual and spiritual aspects (f. diijv), the physical application of paint, in contrast, being demoted to a mechanical art-form.

Zographie [is] the Scholemaster of Picture, and chief gouernor
(f. diijv)

Among the true “Zographers”, Dee included the art-theorists Giorgio Vasari, Pietro Aretino and Pomponius Gauricus.

Zographie, is an Arte Mathematicall, which teacheth and demonstrateth, how, the Intersection of all visuall Pyramides, made by any playne assigned, (the Centre, distance, and lightes, beyng determined) may be, by lynes, and due propre colours, represented (f. diijv)

In Dee’s ideas, “Zographie” was related integrally to his optical theories, since the Pythagorean-based system of single-point perspective was a type of magical catoptrics, with the same function as the catoptrics of the *Proopaedeumata Aphoristica* and the later *Monas Hieroglyphica*. He seems to have believed that a painting whose spatial system was organised in accordance with Pythagorean geometrical ratios would theurgically attract the corresponding planetary influences. In other words, a painting could become a magical talisman, or a catoptrical mirror, registering and enhancing the celestial virtues. Dee’s theory of drawing had revolutionary implications for alchemical illustrators, for example, Michelspacher’s four mirrors in the *Cabala* (1615-16) may well have originated in Dee’s ideas of a graphic theurgy.

Contextualised within Dee’s Euclidean optical and alchemical system, the semiotic function of single-point, spatial geometry is essentially the same as that of his *Monas Hieroglyphica*, since they both have a metonymic relationship with the physical world. As a sign in its own right, the Pythagorean-based system of drawing was reified by Dee to become a signifying mode which operated within real physical space, not only in that of the painting. The Pythagorean ratios used in the single-point system were regarded by Dee as being capable of attracting celestial influences and

rendering them subject to the will of the magus. In the *Mathematicall Preface*, Dee was increasingly thinking of occult practices more as a system of philosophical contemplation, in which the image began to replace practical activity. Szonyi has similarly discussed this possibility in relation to Dee’s earlier *Monas Hieroglyphica*.¹⁶ Hence, the single-point perspective space in the alchemical engravings of Khunrath’s and Maier’s treatises needs to be contextualised within Dee’s theories of astronomical catoptrics, architecture and “zographie” (frontispiece and fig. 41).

The monistic theosophy of Paracelsus was the source for Dee’s belief in the power of a visual image to unify the spiritual and physical dimensions of experience. As discussed previously, Paracelsus had taught that a human-being had both a physical and an astral body, but that his real body was astral. It was by means of the imagination located in the astral body that a person could attain to “gnosis” and, thereby, learn to control physical manifestation through the “astra” present within all things. Thus, for the Paracelsian magus it was sufficient to contemplate an object, instead of manipulating it physically. Visual imagery, such as talismanic cyphers or alchemical pictures, provided a stimulus to the imagination of the magus and acted as simulacra of the objects under his control.

Dee’s view of the theurgic function of Pythagorean-based drawing may explain two particular alchemical images which Yates stated that she found incomprehensible. The alchemical image which specifically puzzled her was Emblem VIII from Maier’s *Atalanta Fugiens* (1617) (fig. 41). Her attribution of a conceptual influence on Maier from Dee in this context is accurate, but she did not connect Emblem VIII specifically to Dee’s *Mathematicall Preface*. Yates, however, took note of the fact that there was some important relationship between Emblem VIII and de Vries’s engraving of the laboratory in Khunrath’s *Amphiteatrum Sapientiae*.

we can see that the perspective in the Maier emblem, stretching out behind the egg, is comparable to the perspective in the Khunrath picture. The perspective symbolizes, I believe, architecture and its allied subjects. When one remembers that music is supplied by Maier to accompany the “egg” emblem, one realizes that it contains all the elements summed up in the *Monas Hieroglyphica*. I am entirely unable to understand all this, nor how it would be possible to work out a mathematical problem in terms of this kind of alchemy. But I believe that implications of this kind are present in the Maier emblems.¹⁷

¹⁶ Szonyi, “Ars Sintrilla” (1999), passim.

¹⁷ Yates, *Rosicrucian Enlightenment* (1986), p. 83.

In answer to Yates' query, it may now be possible to suggest that, first, the image in Emblem VIII does not present mathematics in the guise of alchemy, but alchemy in the guise of optics. Second, the missing link in establishing the meaning of this engraving is Dee's catoptrics and "zographe". It could be added that, from the internal evidence of their texts, one of the purposes of Khunrath's and Maier's employment of single-point perspective and classical architecture was to instruct the alchemist in the science of catoptrics. An important influence on the development of this practice was Dee's astrological catoptrics, Pythagorean geometry and cabbalism.

Maier would have been able to read the *Mathematicall Preface* since he knew English, but it is not possible to assume that Khunrath would have known the contents of this treatise since there is no evidence that he could read the language. Since he does, however, mention Dee's *Propaedeutumata Aphoristica*, as well as the *Monas Hieroglyphica* in the 1609 *Amphiteatrum*,¹⁸ the substance of the *Mathematicall Preface* may also have been known to him, especially since he met Dee in 1589. There is some visual evidence which suggests this possibility in one of the engravings made in 1602 for the *Amphiteatrum* (fig. 29). In this picture of an alchemical castle, there is a pathway drawn in a diagrammatic style, as if it were explaining the geometrical rules of the vanishing-point. Above this gate-way there appears Dee's *Monas Hieroglyphica* (fig. 30). This little scene acts as a signifying motif in its own right, since it is not related to the perspectival structure of the rest of the engraving, which is that of an aerial view. It may be that Khunrath has turned Dee's perspective-system into a second-level signifier (in Barthes' terms), using it to represent Dee's esoteric optical discourse. In fact, this same motif may provide a key to unlocking the complexities of Khunrath's alchemical theory.

¹⁸ Khunrath, *Amphiteatrum* (1609), p. 6.

CHAPTER SEVEN

HEINRICH KHUNRATH: DIVINE LIGHT AND THE FIRE OF THE MAGI

In Bremen, on 6 June 1589, Khunrath met Dee in person,¹ a meeting which may have reinforced his reverence for Dee's exceptional hermetic knowledge. Dee was certainly one of Khunrath's most important mentors, as is evidenced in his *Quaestiones Tres Per-Utilis* (Leipzig, 1607) which is dedicated to "magnificos doctissimos et celeberrimos viros", in particular to

DN. IOANNEM DEE, Londinensem ... hoc est, Sapientiae Sincerioris Gazophylacem magnum; Angliae Hermetem²

Khunrath refers to Dee in the same terms in the *Amphiteatrum* (Hanover, 1609) and his ideas provided an additional stimulus for Khunrath's Paracelsian theosophy. A cabbalistic account of the divine light of God appeared for the first time in Khunrath's *Amphiteatrum Sapientiae Aeternae* (Hamburg, 1595) and he continued to elaborate his catoptrical theurgy in his last treatise *De Igne Magorum Philosophorumque secreto extremo et visibili* (circa 1602-1604).

Khunrath (1560 -1605) (fig. 26) was born in Leipzig, studying medicine first in his birthplace and continuing later in Basel. He travelled widely, including a period of residence at the Imperial court in Prague. On 15 December 1591 he was appointed court physician to Count Rosenberk in Trebona where he met Johann Tholde, the probable author of the Paracelsian "Basil Valentine" alchemical treatises.³ He also resided in Hamburg and Magdeburg. The most surprising aspect of Khunrath's career is the length of time involved in the publication of his writings, since they did not appear in print until 1595 (*Amphiteatrum*, Hamburg edition), followed by a few books in Magdeburg (1599). No more of his treatises were published until after his death in 1605, eventually appearing in Hanover (1609), Strassburg (1608) and Magdeburg (1616). The apparent difficulties in getting his work into print argue for a

¹ Fenton (1998), p. 239. He gives the date as 27 May/ 6 June (old and new style calendars); Halliwell, *Diary of Dr. John Dee*, p. 31.

² Khunrath also mentions on the dedication-page the names of Josephus Quercetanus, as well as Petrus Hollandus, a physician of Hamburg.

³ Evans, pp. 212, 214.

strong degree of opposition from some quarter. This issue requires further study since the antagonistic forces surrounding Khunrath may explain the course of his spiritual and intellectual development in the period 1595-1604.

The Christological orientation of Khunrath's ideas has not received sufficient attention from scholars, apart from that of Montgomery who has described his theological position as being firmly based in orthodox Lutheranism.

[F]or Khunrath the alchemical quest of the Philosophers Stone was a quest to reveal the true wholeness of the physical universe (the Macrocosm) on the basis of Christ's restoration of wholeness to man (the Microcosm) ... Khunrath conceives of the Stone as the Filius Macrocosmi ... and identifies it with Christ himself⁴

Montgomery has noted that the most important champion of Khunrath's alchemy was Johannes Arndt (1555-1621), citing his position as a respected Lutheran pastor in order to validate Khunrath's own doctrinal regularity. Montgomery, however, chose to disregard the irregularity of Arndt's own religious beliefs, for his introduction of a pietistic element into the doctrinaire creed of his time was the result of influences from highly irregular sources. In fact, Arndt's frequently reprinted work, *Vier Bucher von wahren Christentum* (1605), was based on the writings of Valentin Weigel (1535-88), a Lutheran pastor from Chemnitz. Weigel promoted mystical practices based on the concept of the imminent and eternal presence of Christ within the human soul, drawing on Paracelsian alchemical theosophy. He was developing an increasingly separatist spiritual path which came to be designated as spiritual "enthusiasm", in the sense of a soul filled with the guidance of the Holy Spirit. He taught that individual union with God was the gift of the indwelling Holy Spirit, the sole redeeming factor in human salvation, rather than the result of submission to the dogma framed by the theologians of the Lutheran Church. Weigel also had an unorthodox view of the sacraments of the Lutheran Church, specifically those of absolution and the Eucharist.⁵

⁴ Montgomery, I, pp. 8, 17.

⁵ For the epistemic changes in the mid 16th-C caused by the Lutheran reformation and their relation to chiliasm see Peuckert, *Die Grosse Wende* (1948), pp. 587-644. An account of Weigel may be found in Alexandre Koyre, *Mystiques Spirituels Alchimistes* (Paris, 1955), pp. 81-116, and also in Peuckert, *Pansophie*, 2, pp. 290-300. Weigel's writings have been edited by Will-Erich Peuckert and Winfried Zeller in the *Samtliche Schriften* (Stuttgart: Friedrich Frommann Verlag, 1962-78), see vol. 1, "Vom Ort der Welt", pp. 13-21 (cosmology) and vol. 2, "Von der Vergebung der Sunden oder vom Schlüssel der Kirchen", pp. 29-31 (absolution and the role of Christ) and Ch's 8-10 (on the Lutheran priesthood), also

Khunrath's theosophical alchemy and cabbalism was acquired directly from Weigel.

There are some complex inter-relationships between all of these figures which require some very careful examination, since the alliances seem to shift and change with time, for reasons which are not immediately apparent. For example, Johann Valentin Andreae (1586-1654) in his youth had also engaged with the theosophical hermetic circles, but in his later writings he seemed to have turned against their members. In fact, he praised Arndt in his *Mythologiae Christianae* (1619) as being the hero of a missionary endeavour against heretical extremists.⁶ How should this be interpreted in view of the Weigelian influences on Arndt himself? It is only possible to conclude that, whatever may have been Arndt's connection with the spiritual enthusiasts in the early 1600s, he either eventually rejected them, or, most probably like Andreae, he had grown suspicious of certain members of these circles (perhaps distinguishing between Lutheran pietists and the adherents of more blatantly magical practices). Conversely, Arndt had never been regarded as tainted by his interest in chiliastic beliefs. Further complicating the attempt to understand the religious affiliations of the 1590s to 1620s, is the fact that Andreae publicly attacked Khunrath in 1619, despite the fact that Arndt supported him.

Arndt's eulogistic commentary on Khunrath's *Amphiteatrum* was published as an appendix to Khunrath's treatise *De Igne Magorum Philosophorumque* (Strassburg: Lazarus Zetzner, 1608) by the Paracelsian alchemist Benedict Figulus, acting as editor on Khunrath's demise. Figulus, a Franconian, was described as the "wandering alchemist" by Peuckert.⁷ His alchemy displays the effect of Weigel's ideas and, possibly, also Khunrath's, since in his *Rosarium novum olympicum* (1608) he describes Christ as being the "stone of the wise" and he refers to the "two books" of knowledge, that of God's revelation and that of the alchemical laboratory ("des Lichts der Natur"). This is probably an echo of Khunrath's maxim of praying and working in the oratory and the laboratory, as illustrated in

vol. 4, "Dialogus de Christianismo", pp. 7, 133-51, 320-22, especially Ch. 3 on the role of the historical Christ. Weigel's Paracelsian sources are analysed in Horst Pfefferl, "Valentin Weigel und Paracelsus" in *Paracelsus und sein dāmonunglaubiges Jahrhundert* (Vienna: Verb. d. Wiss. Ges. Österreichs Verlag, 1988), pp. 78-89. For Arndt see Christian Braw, *Bucher im Staube Die Theologie Johan Arndts in ihrem Verhältnis zur Mystik* (Leiden: E. J. Brill, 1986), pp. 104-43. See also Dickson (1998), pp. 36-37; Frick (1973), pp. 179, 180, 587; Stoeffler, *Rise of Evangelical Pietism* (1965), pp. 202-10.

⁶ Johann Valentin Andreae, *Mythologiae Christianae* (Strassburg: Lazarus Zetzner, 1619), Bk I, pp. 5-6. See also Frick (1973), pp. 148-54.

⁷ Peuckert, *Pansophie* (1956), 2, pp. 314-22.

de Vries' engraving of 1595 in the *Amphiteatrum* (frontispiece).⁸ According to Dickson, Figulus joined the heterodox circles at the University of Tübingen in 1606-08, at a time when Andreae, as a student, was involved with hermetic and neoplatonic mystical ideas. The appearance of Figulus' own treatise in the *Theatrum Chemicum* (Strassburg; Zetzner, 1602) provided a source for Andreae's *Chymische Hochzeit* (composed circa 1605).⁹

Dickson, like Peuckert, Yates and Gilly, contends that Andreae was one of the authors of the Rosicrucian Manifestos. Although this argument had been categorically rejected by Montgomery, Dickson concurs with him that Andreae in his later life was alarmed by the paganistic inclinations of certain Rosicrucian sympathisers. It has emerged from Dickson's study that Andreae's personal affiliations were more complicated than Montgomery would allow, with personal friendships outweighing his fear of the religious extremists. From the studies of scholars of the Rosicrucian movement, it emerges that figures such as Simon Studion, Abraham Hoelzel, Tobias Hess and Christoph Besold, constituted a genuine threat to entrenched Lutheran orthodoxy.¹⁰ Even so, Dickson negates any suggestion that there was an organised heretical movement in Protestant Germany. At the moment, in fact, the emerging picture of this history is one in which personal loyalties fluctuate through-out the first two decades of the seventeenth century.¹¹

Some further clues to these events are provided in the 1708 Frankfurt edition of Khunrath's alchemical treatise known as the *Chaos*, where the introduction by an anonymous editor informs the reader that Khunrath began the practice of alchemy at a very young age, forthwith attacking the "false alchemists". The editor states that the *Confessio* (or *Chaos*) was issued in Magdeburg in 1597 at which time it was Khunrath's twenty-third year of practising alchemy.¹² This fact again raises the query as to why he delayed for so long before issuing his work in print.

⁸ Peuckert, *Pansophie* (1956), 2, pp. 367-68. Peuckert does not consider the influence of Khunrath on Figulus. See also Gilly, *Adam Haslmayr. Die erste Verkünder der Manifeste der Rosenkreuzer* (Amsterdam: In der Pelikaan, 1994), pp. 93-105.

⁹ Dickson (1998), pp. 32-36; Gilly, *Adam Haslmayr* (1994), pp. 138-45; Gilly in Janssen (ed.), *Das Erbe der Christian Rosenkreutz* (1988), pp. 70-72 and passim.

¹⁰ Dickson (1998), pp. 32-36. For an earlier interpretation of these events see Frick (1973), pp. 112-64. See also Gilly, *Adam Haslmayr* (1994), passim; Gilly, *Das Erbe der Christian Rosenkreutz* (1988), pp. 63-90; Gilly, *Cimelia Rhodostaurótica* (1995), passim.

¹¹ Dickson (1998), pp. 30-40, 62-66, 71-88.

¹² The introduction is signed "G. C. J." and it appears in H. Khunrath, *Vom Hylealischen Das ist Pri-Materialischen Catholischen oder Allgemeinem Natürlichen Chaos* (Frankfurt: Georg Heinrich Dehring, 1708) ff. 2v-4r, 6r-v.

The editor of the *Chaos* provides a historiography of Khunrath's work, mentioning the late seventeenth century citations of Johannes Moller and Gottfried Arnold. Moller wrote a critical history of literature which was published as the "Homonymoscopus" in the fourth edition of Daniel Georg Morhof's *Polyhistoria literarus* (Lubeck: Petrus Boeckmann, 1687). In this he briefly mentions Khunrath among other late Renaissance authors writing in the context of cabbalism and theurgy.¹³ Gottfried Arnold in his *Unparteiische Kirchen-und Ketzer Historie* (Frankfurt: Thomas Fritsch, 1699-1700) produced one of the earliest histories of the Rosicrucian movement. Arnold's own work contributed substantially to the separatist pietism of the following century, but he himself continued to adhere to the scriptures. He acknowledged the role of Christ in saving humanity from the consequences of their sins, as well as the value of the Lutheran sacraments as a source of divine grace. Nevertheless, Arnold's own spiritual inclinations led him also to emphasise the act of God's grace which renewed the inner Christ within the individual soul, the "unio mystica" of Boehme by which he was deeply influenced. He was also strongly affected by the pietism expressed in Johann Arndt's work. Consequently, Arnold blamed the scholastic theologians of the Lutheran church for their obsession with dogma, causing them to misunderstand the mystical tendencies within their spiritual community and too readily condemning them as heretical.¹⁴

Arnold's account of the figures involved in the Rosicrucian movement is similar to that of Yates and Dickson (although neither scholar appears to have used Arnold's work in their own research). Yates was of the opinion that Rosicrucianism was a highly politicised extension of Protestant Christianity which operated, as it were, under the cover of a secret hermetic code.¹⁵ Frick, however, had a different view, namely, that the mystical hermeticists were not adhering to Lutheran doctrine at all. Citing the historical sources of Rosicrucianism in pagan antiquity and the pantheistic heresies of the medieval period, Frick underlined the non-Christian content of Paracelsian and subsequent Rosicrucian theology.¹⁶

¹³ Introduction, *Chaos* (Frankfurt, 1708), ff. 2r, 4r, 6v; Johannes Mollerus, "Homonymoscopus" in Daniel Georg Morhof, *Polyhistoria literarus, philosophicus et practicus sive de notitia auctorum et rerum commentarii* (Lubeck: Petrus Boeckmann, 1747), 4th ed, p. 688. The first edition of Morhof appeared in 1687.

¹⁴ For the sixteenth century see Stoeffler, *Rise of Evangelical Pietism* (1965), pp. 180-246 and for the later period see F. Ernest Stoeffler (preface) in *The Pietists. Selected Writings* (Peter C. Erb ed.) (New York: Paulist Press, 1983), pp. 11-17 and selections from Arnold pp. 227-40.

¹⁵ Yates, *Rosicrucian Enlightenment* (1986), passim.

¹⁶ Frick, *Die Erleuchteten* (1973), pp. 133-64.

Montgomery argued even more strongly that the Rosicrucians betrayed Luther's reforms and, even worse, that they were atheistic or, at the very least, paganistic in their sympathies. Hence, it appears, that it has never been possible to reach agreement on what may, or may not, constitute heresy in the adoption of mystical practices by members of the reformed Church. An opinion in either direction seems to rest largely upon the personal beliefs of a particular historian. Nearer the facts of the situation may be Dickson's analysis of Rosicrucianism as a heterogeneous and shifting network of individuals and groups who held a variety of beliefs, argued with each other and constantly changed their alliances. There was no anti-Christian Rosicrucian belief system, nor, really, much of a system at all, so much as a restless conceptual and spiritual terrain in which the participants in a highly sensitive political discourse may have used much the same symbolic language (that of the hermeticists, cabbalists and Paracelsians). However, this common terminology was deployed to express a variety of political and spiritual concepts.

As the main sources of Rosicrucian ideas, Arnold cites Paracelsus, the cabbalism of Pico della Mirandola, Reuchlin, David Mederus, Michael Maier, Robert Fludd, John Heydon, Julius Sperber, Heinrich Nollius, Julianus de Campis, "Valentia" (that is, Andreae), Theophilus Schweighardt, Valentin Weigel, among others (as well as medieval predecessors such as Roger Bacon) (Arnold, II: 613-28). Arnold also attributed the composition of its first manifestos, those of the *Fama* and *Confessio*, to Johann Valentin Andreae (Arnold, II: 614-15). He allocates Khunrath a separate section in his history of the Rosicrucians (Arnold, III: 1-13), mentioning a later Dutch philosopher Friedrich Bredling ("Breklingius") of Holland. The author of the introduction to the *Chaos*, basing his account on Arnold, reports that Bredling had praised Khunrath's alchemical allegory of Christ for its use of cabbalism, magic, physics and chemistry (f. 5v).¹⁷ An important mention of Khunrath's contemporary associates is provided by both the editor of the *Chaos*, as well as by Arnold. In the *Chaos* two of his supporters are named as being Andreas Riccius of Saxony (f. 4r), who in 1604 wrote the laudatory poem accompanying Khunrath's portrait in the 1609 edition of the *Amphiteatrum* and Joannes Seussius of Dresden (f. 4v), whose epigram also appears in the same edition. Arnold recounts briefly that Riccius was the rector of a

¹⁷ Introduction, *Chaos* (Frankfurt, 1708), f. 4r. He was drawing on two of Bredling's texts, namely, Fridericus Breklingius, *Anti-Calovium s. Calovio cum Asseclis suis prostrato* and *J. B. cum aliis testibus veritatis defensio* (1688), see Arnold, II, p. 614, cols. 1-2. For Bredling see also Will-Erich Peuckert, *Pansophie*, 3, *Das Rosenkreutz* (Berlin: Erich Schmidt Verlag, 1973), pp. 21-22.

school in Saxony ("Sachsischer schul-rector") and that Seussius was the secretary of the upper consistorial court in Dresden ("Secretarius in Thursachsichen Ober-Consistorio zu Dresden") (Arnold (1700): 12). This argues for a degree of support for Khunrath on the part of respected figures in the Lutheran hierarchy.

The scholarly problems of ascertaining Khunrath's precise role in the development of the Rosicrucian discourse are exacerbated by the fact that Andreae in his *Mythologiae Christianae* in 1619 condemned him.¹⁸ At first glance, this would seem to imply that Khunrath was closely associated with heretical elements, but there exists evidence that Andreae had not always been so antagonistic to him, since the *Chaos* names both Andreae and Arndt as Khunrath's champions (f. 5r). Moreover, the motivations behind Andreae's change of attitude towards hermeticist circles are far from clear and require further analysis. Where Khunrath was concerned, it may be that his contemporaries based their opinion of him less on the religious content of his writings, than on the pragmatic immediacies of their own unstable political situation. The religious and political history of the period was explosive and the constant instability of the Protestant states is reflected in Khunrath's and Andreae's writings from the 1590s to the 1620s.

Arnold mentions all the citations, for and against Khunrath, by Andreae, Riccius, Seussius and Bredling. Drawing on Andreae in the *Mythologiae Christianae*, he locates Khunrath among those philosophers influenced by Aegidius Gutmann, Valentin Weigel and Bartholomeo Scleus. Only two of Khunrath's works are mentioned by Arnold, the *Chaos* of 1598 and the 1609 *Amphiteatrum*, whose place of publication he gives as "Hanoviae", not "Hanau". He states that this was written in 1602 (Arnold, III: 12, col. 1). Arnold also quotes at length from Bredling's praise of Khunrath as a god-fearing thinker and he himself exonerates Khunrath's work on the grounds that he relied on scripture and that his main aim was to elucidate God's word for others (Arnold, III: 12, col. 1). Arnold points out the kinship between Khunrath's emphasis on the Holy Spirit and that of Weigel whom he names as the founder of "enthusiasm" (pietism influenced by Paracelsian theosophy) and, hence, of the Rosicrucian movement (Arnold, II: 588, col. 1). In fact, he identifies Khunrath as being a similar "enthusiast", that is, one who prioritises the individual inspiration of the Holy Spirit, rather than the dictates of the Lutheran Church. Arnold considered that Khunrath had explained his religious

¹⁸ Johann Valentine Andreae, *Mythologiae Christianae* (Strassburg: Lazarus Zetzner, 1619), Bk. III, 45, p. 271-72.

position in the *Chaos* and also in the engraving of the "Porta Amphiteatri sapientiae" by which he means the 1602 engraving of the cave of spiritual illumination (Arnold, III: 13, col. 1) (fig. 31).

He concludes by citing Khunrath on the inspiration of the Spirit as being Christian in nature (Arnold, III: 13, col. 1), referring to Khunrath's picture of an "angel" standing amidst the flames of the Holy Spirit, which Arndt had similarly explained as being Khunrath's central concept (Arnold, III: 13, col. 1)(fig. 32). Arnold mentions Khunrath's "warning" to those false alchemists who had forgotten God in their engagement with the process of transmutation and he also recalls Khunrath's anger in the *Amphiteatrum* against the betrayal of the Protestant cause by theologians who were "prostituting" themselves (Arnold, III: 13, col. 2). Finally he states that Khunrath's alchemical quest for the philosopher's stone was a search for God (Arnold, III: 13, col. 2).

In the present study, Arnold's account of Khunrath will be used to support a reassessment of Khunrath's alchemical treatises. These will be read as part of a campaign on two main fronts, first, against materialist and anti-Christian tendencies within hermetic circles and, second, against the dry sophistry of the institutional theologians. Khunrath's work from 1595 is strongly polemical, both in defending his own doctrinal rectitude and in attacking a variety of false religious and spiritual positions. These will be examined in a later chapter but, first, it is necessary to clarify the outlines of his religious and alchemical ideas in the treatises written prior to the *Amphiteatrum* of 1609.

Khunrath issued the first version of the *Amphiteatrum* in 1595. The fortunes of this edition were stormy, as were those of the second version which Khunrath intended to publish in 1604, or even earlier in 1602. Eventually, his editor Erasmus Wolfart produced the work in 1609 amidst such confusion that no definitive edition of the treatise has ever appeared. It should be noted that Khunrath's treatises written after the first *Amphiteatrum* (1595) adopt such an ecstatic, visionary tone, that the reader is provoked into questioning the mental stability of the author. Whilst this could be regarded as the customary delivery of any prophetic "illuminatus", it is also the voice of a man under considerable stress. In comparison, the tone of the *Amphiteatrum* in 1595 seems relatively muted and cryptic.

One of the earliest alchemical texts produced by Khunrath may have been the *Warhafftiger Bericht vom philosophischen ATHANORE* (Magdeburg, 1599). This may have existed some years earlier in manuscript form, since the introduction to the Frankfurt 1708 edition of Khunrath's *Chaos*, recounts that he was distributing the *Athanor* publically in Magdeburg in 1597 (*Chaos*, 1708: f. 3r). The Imperial "Privilegium" granting permission

for the publication of the *Athanor* appears at the front of the 1599 edition, awarded by Rudolph II on 1 June 1598. The *Athanor* appeared in a third augmented edition in Magdeburg (1615). Khunrath referred to the *Athanor* in what was probably his last treatise, *De Igne Magorum*. In contrast to his others works, the *Athanor* is a relatively conventional discussion of the pyromantic alchemical art, very different in tenor and concept from *De Igne Magorum* for which the most appropriate date of composition would be circa 1602-4. In the *Athanor* Khunrath does not employ the cabbalah, which is only mentioned once at the end of the treatise in connection with the *Amphiteatrum*.

In the *Athanor*, Khunrath employs a Paracelsian discourse in his account of the higher spiritual and the lower elemental fires, the spiritual fire is termed "Azoth", being described as a triunity of Anima-Corpus-Spiritus, or Sulphur-Salt-Mercury. He advises his reader that the alchemical fire should be similar to the digestive fire of the stomach, making a Paracelsian reference to the "Archeus" who exists in the stomach controlling the inner degrees of heat.¹⁹ He explains that the inner and outer fires should correlate in the alchemical process, that is, the heat applied externally to the material should be of the same strength as that which already exists within the materials in the flask.²⁰ The central interest in the *Athanor* is the Paracelsian preparation of medicines by means of the "Magnesia Universalis" and "mercurial waters". The "Magnesia" is the Paracelsian prime matter, also known as the Salt, or Sulphur, "sal sapientiae naturae sive sulphure" (*Athanor* (1615): 12-14, 19-20). Khunrath provides an account of the alchemical fires, the process of digestion, the humid heat of the "balneum" and the use of the philosophical glass-vessel. The philosopher's stone, he explains, contains its own intrinsic heat which is a volatile aether, awakened by the application of external heat.²¹ Finally, Khunrath mentions his *Amphiteatrum*, briefly referring to the cabbalah and the "Gradus Magie" (*Athanor* (1615): 59).

¹⁹ For Paracelsian medical theory see Pagel (1982), pp. 104-9.

²⁰ Heinrich Khunrath, *Athanor*, 3rd ed. (Magdeburg: In Verlegung des Autoris, 1615), pp. 32, 10-11, 28-29.

²¹ *Athanor* (1615), pp. 53-54: "WEITER est IGNIS intrinsecus NATURALIS ac invisibilis, rebis naturalibus omnibus; et secundum hoc LAPIS noster suum habet in se quoque Ignem invisibilem et proprium; sed quiescit, nisi calore debito Ignis Exterioris, sive ELEMENTARIS, puta, Carbonum; Olei; Butyri; Ceræ; Servi et c; sive AETHEREI, videlicet, vel vini sublimati, non phlegmatici, vel spiritus frumenti ardentis (quia nutriendo flammam, adsumuntur, quare et in additione sui similis conservandi) IGNE IGNATURALI, sive instrumentali, dicto Occasionoto, puto in Balneo; ... Das ist/ Dis NATURLICHE FEUER ist in allein Naturlichen dingen/ab schon unsichtig".

Although published in the same year, Khunrath's treatise, the *Magnesia Catholica Philosophorum* (Magdeburg: Johan Botcher, 1599) was composed later than the *Athanor*, although it also depends as much on medieval alchemy, as on contemporary Paracelsian models. The 1599 edition displays the Imperial Privilege granted on 1 June 1598. The importance of the *Magnesia Catholica* (M. C) lies in the fact that, perhaps for the first time, Khunrath identifies Jesus Christ with the philosopher's stone.

Harmonia analogica Lapidis Philosophorum mirificimit IHSUH CHRISTO, VERBO DEI PATRIS incarnato MIRIFICO, et contra (M. C (1599): 30)

Khunrath also speaks of Christ in these terms in the earlier published *Amphiteatrum* of 1595, though this treatise may, in fact, have been composed after the *Magnesia Catholica*, since in the *Amphiteatrum* the analogy of Christ as philosopher's stone is made in a cabbalistic context, whereas in the *Magnesia Catholica* Khunrath does not refer to cabbalism. This fact alone suggests that both the *Athanor* and the *Magnesia Catholica* were written before the 1595 *Amphiteatrum*. It may be that these two texts were updated in 1599 with a mention of the *Amphiteatrum* in the context of their own belated publication.

For his alchemical authorities Khunrath in the *Magnesia Catholica* mostly relies on the traditional canon of medieval alchemy, such as the *Turba Philosophorum*, Arnald of Villanova, Bernardus Trevisanus, among others (M. C: 10, 36, 64, 77, 94 et al). He also mentions Agrippa and Trithemius with approval (MC: 99). As in the *Athanor*, the central emphasis is on the "Magnesia" which Khunrath also calls the "Prima Materia Catholica", developing his earlier description by equating it with Christ as the essential factor in human and cosmic salvation.

Ich weiss aber allbereit, das (wegen Dieser Meiner Bestentnis MAGNESIAE/ CHRISTI IHSUH Symbolischer und Naturlicher Contrafactur in dem Buche der Grosse Weld) ... Den dieser MAGNESIA, IHSVH von Nazareth, ... Symbolischen ... [ist]
(M.C: 181)

In the Magdeburg edition of 1599, the *Magnesia Catholica* concludes with an engraving of an bespectacled owl, carrying flaming tapers in its claws and framed by two lit candles. The first two lines of a longer poem accompany the image (fig. 28).

The treatise known as the *Chaos* (*Von Hylealischen das ist pri-materialischen oder allgemeinen naturlichen Chaos*) appears to belong to the same literary period as the *Athanor* and the *Magnesia Catholica*. The "Praefatio Apologetica" to the *Chaos* was written by Khunrath and is self-dated 13 June 1597 at Magdeburg. The *Chaos* is also sometimes cited under another name as

the *Confessio* and there exists a slightly earlier edition of this work, entitled *Confessio – de chao physico-chemicorum catholico*, dated 1596. The 1597 text was reissued in 1616 in Magdeburg by Johann Schmeidt. Its last appearance was in 1708, when it was re-published with new commentaries by Georg Derhling. A related work, the *Symbolum physico-chymicum de chao*, appeared in Hamburg in 1598, issued by von Ohr. This particular work is very brief, consisting of two separate tracts of twenty-two pages, each providing an account of the "Magnesia-Azoth", employing cabbalistic terms and referring to the creative role of the "Ruah-Elohim". Both of these texts are self-dated as 12 December 1597. They are a digest of the ideas in the full-length *Chaos* and at the very end Khunrath has included a *Philosophisch Leid* (philosophical song) written by himself and dated 23 December 1597.

At this point, there commences a series of self-referential quotations between Khunrath's various treatises which complicates the attempt to provide a chronology for their composition and publication. Nonetheless, it is important to unravel these inter-textual knots in order to perceive more clearly the direction of Khunrath's alchemical ideas in the late 1590s. The main factor to take into account is that an author may wish to update his work prior to its publication. A problematic statement is found in the *Magnesia Catholica* where Khunrath states that in his foreword to the *Chaos* he has mentioned the third figure of his *Amphiteatrum*. (M. C: 77). As it stands, his statement implies that the *Amphiteatrum* was composed first, then the *Chaos* and finally the *Magnesia Catholica*, but this does not correspond with the apparent development of Khunrath's ideas, nor with that of his literary style. First, it should be noted that the *Magnesia Catholica* is more archaic in its conceptual programme than the *Chaos*, since neither the *Magnesia Catholica*, nor the *Athanor*, refer to cabbalism. In addition, although the central concept of the "Magnesia" in the *Magnesia Catholica* is drawn from Paracelsus, he is not cited directly and the general orientation of the theoretical programme remains that of the traditional medieval canon. More subtly, the *Magnesia Catholica* and the *Athanor* share kinship in their relatively plain literary style. In comparison, the *Amphiteatrum*, although it was published earlier than these two treatises, expounds a developed Christian cabbalism, centred on the divinity of light and founded in Paracelsian alchemy. It includes ecstatic and poetic flourishes from Khunrath's pen, as well as a range of his linguistic jokes moving rapidly between Latin, Greek, Hebrew and German.

The *Chaos* of 1597 is a more refined work than the *Athanor* and the *Magnesia Catholica*. More conceptually related to the *Amphiteatrum* of 1595, the *Chaos* also employs a complex, poetical literary style similar to that

found in *De Igne Magorum*, as well as in the second version of the *Amphiteatrum* (Hanover, 1609). In these later treatises, Khunrath places a heavy emphasis on Christology, using imagery of the aethereal light adopted from cabbalism and integrated with the Paracelsian idea of the astral virtue, the “azoth”. Hence, the *Chaos* is more aligned with contemporary cabbalistic interests than is the *Magnesia Catholica*.

The *Athanor* is also found briefly mentioning the *Amphiteatrum*, but, as in the *Magnesia Catholica*, it is significant that these citations are not further developed. It would suggest that the references to the *Amphiteatrum* were added in 1599 at their time of publication in view of the fact that the *Amphiteatrum* had already appeared. From the internal evidence, it seems that the *Athanor* and the *Magnesia Catholica* were composed before the *Amphiteatrum* and that their publication was substantially delayed. When Rudolph II awarded the Imperial Privilege to Khunrath on 1 June 1598, it was used to cover the printing of three treatises, those of the *Athanor*, *Magnesia Catholica* and *Chaos*. This spate of publications in 1599 suggests that Khunrath was rushing into public view treatises which had already existed for a number of years. The Privilege was also used to cover the second version of the *Amphiteatrum* in 1609, although Khunrath seems to have intended this to appear much earlier in 1602. The *Athanor* and the *Magnesia Catholica* could have been composed at any time between the late 1580s and 1595, but the *Chaos* belongs to a different phase of literary activity. The probable conclusion is that it was the *Amphiteatrum* of 1595 which initiated the theoretical programme of a series of related treatises, which included the *Chaos* and *De Igne Magorum*.

If this chronology is correct, then it transpires that Khunrath's thinking undertook a change of direction in the late 1590s, prompting him to publish in 1595 and 1599 some long-delayed texts of circa 1589-1594/ 5. Then, from circa 1595 to circa 1604 he produced a new set of cabbalistic alchemical treatises, founded on Paracelsian chemistry and commencing with the first edition of the *Amphiteatrum* (1595). It is necessary to examine these last treatises more closely to determine whether it is possible to establish his motives in framing an alchemical discourse based on cabbalism.

In his “Praefatio Apologetica” to the *Chaos* Khunrath introduces his theology of light in the same terms as in the *Amphiteatrum* of 1595. He states that one should view the light of nature through the Light of God.

Ich zu sehen und ausszunehmen das Licht der Natur/ in Deinem Liecht/ O Gott ! der du ein Liecht bist (*Chaos*: f. Aijr)

Khunrath mentions the “third figure” of the *Amphiteatrum*, explaining that it depicts the philosopher's stone. It may be possible to identify this

“figure” as being that of de Vries' circular engraving of a laboratory, for in a margin note Khunrath refers to a “vestibulum” (hall), as well as to a “ianua” (doorway) as drawn in his “third figure” (frontispiece).²² He informs the reader that to understand the third figure it is necessary to be a theologian in the oratory and an alchemist in the laboratory. Through-out his writings, Khunrath refers to the necessity of prayer and work (f. Aijr). This axiom is his “leit-motif”, as it was that of John Dee.²³ In fact, de Vries' emblem is the summation of Khunrath's alchemy of light.

The *Chaos* is dedicated to Pico della Mirandola and, due partly to his influence, Khunrath produces the first developed exposition of his cabbalistic alchemy. In particular, he discusses the sephiroth on the Tree of Life, specifically, “RUAH-HHOCHMAH-EL”, which is the second sephiroth of Divine Wisdom on the right axis of the Tree. Khunrath interprets “Hochmah” as the Divine Light of God illuminating both nature and the human intellect. He relates it to the alchemical “celum” or quintessence, as well as to the cabbalistic “Schamaim”, which is the material used for the creation of the world. This is a topic which he develops further in the second version of the *Amphiteatrum* (Hanover, 1609). This interpretation of “Hochmah” as both divine and natural light forms the central trope of Khunrath's cabbalistic theology (*Chaos*: 2-4, 11, 40-42, 44, 46, 50, 61-66, 70 et al).

In the third chapter of the *Chaos*, Khunrath discusses the light of nature in relation to the light of understanding (*Chaos*: 67-105). He quotes from Paracelsus that the generative power of God is light which is the soul. It shines in all natural entities and it is Christly, cabbalistic and magical (*Chaos*: 67-68). The light of the soul, by the will of the Triune God, made all earthly things appear from the primal Chaos. Nothing can be made without it. The light and the soul of the world are in nature and the life of the world is the light of nature.²⁴ Khunrath also quotes from

²² The text used in the present study is Schmeidt's Magdeburg edition of 1616, “Praefatio Apologetica”, f. Aijv: “der wunderbare Stein der Weissen ... ist mit unfehlbaren und Diamatischen Grundfesten/in der Dritten Figura meines Amphiteatri Sapientiae aeternae [gesehen] ... (f. Aijv) quam notionis huius omnis januam et vestibulum recte nominas, te docebit quod quaeris”.

²³ I am grateful to Professor Gyorgy Szonyi for drawing my attention to Dee's use of the same axiom in his writings.

²⁴ *Chaos* (1616), p. 68: “Paracelsus in seinem Schrifften vielmals gedenket ist hierzu durch den willen des dreyeinigen Gottes/verordnet und auffgangen in Gott; herfur und eingangen in das erschaffene Weldanfangs CHAOS. Alle Dinge in der Weld ... seint mit dem selben gemacht/und ohne dasselbe ist nichts gemacht/bestehet auch nichts/was in der Weld gemacht ist/und Natürlich bestehet. In Ihme ist das Leben und Seele der Weld/und das Leben der Weld/ist das Licht der Natur”.

the New Testament that "the light shineth in the darkness", while a note in the margin associates this quotation with the alchemical concept of the "Quinta Essentia in Abstracto" (*Chaos*: 68). It is the work of the alchemist in his oratory and laboratory to find the incorporeal "fifth essence" of life which lights all creation from the angels down to the minerals (*Chaos*: 69-70). The light of the natural sun is analogous with the power of cabbalah, magic and alchemy (*Chaos*: 71-72).

In this section, Khunrath has elegantly integrated all the unique aspects of his alchemy, namely the figure of Christ with the Paracelsian astral virtue and cabbalism. He has managed to do this partly through his management of prose-style which is so dense and impacted that its idiosyncratic quality is difficult to capture in translation. In the wording and grammatical structure of his text, Khunrath slips seamlessly from the discussion of Nature to that of the intellect, then onto theology and alchemy, finally concluding with the Paracelsian "Salt". This now becomes the central figure of his alchemical system, which equates the Salt with the light of Eternal Wisdom, as well as with that of the natural sun, according to the equation Light is to Life, as Soul is to Salt (*Chaos*: 72-75). He explains that the Salt is also sulphur and mercury. It is soul, life and spirit. Khunrath even likens the Salt to the "Ruah Elohim" who are the rulers of the third sephiroth "Binah" (Understanding). As the active form of God and the creative principles of lower manifestation, the "Ruah-Elohim" stand on the left trunk of the cabbalistic Tree of Life opposite "Hochmah" (Wisdom). They operate specifically on "Malkuth" (Kingdom or earth). In his last three treatises, Khunrath returns constantly to the theme of the "Ruah Elohim".

In the *Chaos*, Khunrath produces a pantheistic ontology in which divine light in the form of the Salt becomes the essence of physical nature, according to the Paracelsian equation universal Salt = life. This light (nature) is an emanation from the Triune God sent by the "Ruach-Elohim" (Second Person) into the virgin world (*Chaos*). It effected the creation by means of the "Schamaim", or aether, which is both a union of the opposites of fire and water and the universal Salt (*Chaos*: 74-75). The "Ruah-Elohim" is Christ who redeemed creation through the sacrifice of his blood (*Chaos*: 75).

Khunrath's term for *Chaos* is "Magnesia", as in the *Athanor* and the *Magnesia Catholica*, where he had also described "Magnesia" as the Salt, Sulphur and Mercury (*Athanor*, 1615: 12-14). Also in the *Magnesia Catholica*, he had already identified "Magnesia" with Christ, as the substratum of a pantheistic creation, although not in cabbalistic terms (*M. C.*: 181, 184). The theme of Christ's redemptive function is developed in some detail in the *Chaos*. Thus, God's light is said to be the inner form of the

world which is inter-related cabbalistically (*Chaos*: 75-76). Khunrath discusses the creation of the microcosm, concluding with the manifestation of Christ in human form. In addition, he introduces cabbalistic references, such as the "Schamaim" or the concept of Jehovah as the "Archetypus" of the world (*Chaos*: 77-90), but he insists that Jesus was the second Adam, the Logos who redeemed the world through the sacrifice of his blood (*Chaos*: 85). Again, he declares that Christ is the union of soul and flesh, God and humanity (*Chaos*: 86). Khunrath once more compares the philosopher's stone to Christ, who is also the universal panacea (*Chaos*: 86-88). This medical aspect of Khunrath's Christology may have been remarked by Fludd who structured the alchemical theory of his *Medicina Catholica* (1629-31) and *Philosophia Sacra* (1626) around the same idea.

Later in the *Chaos*, Khunrath returns to the subject of the "Salt", quoting from the *Rosarius Maior* of Arnald of Villanova that all the secret lies in the Salt (*Chaos*: 256-265), but he proceeds to relate the metaphysical Paracelsian Salt to chemical saltpetre, as well as to vitriol and other substances. This indicates that he knew of the more recent Paracelsian developments in the theory of the aerial nitre, perhaps from Quercetanus whom he acknowledges in his *Quaestiones Tres Per-Utilis*. In his seventh chapter, Khunrath also discusses the making of potable gold. In Paracelsian terms he informs the reader that this potion is the internal sun whose virtue is derived from the "azoth" and the Salt which are related to the "Magnesia" (*Chaos*: 230).

In the *Chaos* of circa 1597 the strongest influences are those of Paracelsian alchemy, the cabbalah and Lutheran pietism on the model of Weigel, but Khunrath makes no reference either to astrology, or to catoptrics. These are encountered in, possibly his last treatise, *De Igne Magorum Philosophorumque* (Strassburg: Lazarus Zetzner, 1608) which interprets the alchemical furnace in mystical terms as the site in which the aetherial light and the astral virtues work their effects. The properties of the alchemical furnace are determined by the sacred fire of the divine light, as well as by the natural virtues of the sun. For the first time, Khunrath gives clear instructions for the use of catoptrics in order to draw the astral virtues into the alchemical work. In its medical theory, *De Igne Magorum* is pre-occupied with the subject of the "aurum potable". Khunrath draws on Bernard of Treviso, Lull and Paracelsus, stating that the universal medicine derives its virtues directly from God and, hence, it is superior to all other medical preparations.

A "Philosophus anonymous" has added an introduction to *De Igne Magorum* which is a summary of the main points of Khunrath's argument. In addition, the editor, Benedictus Figulus, included his own brief commentary at the end of the treatise which reiterated the theme of Khun-

rath's difficult life and the opposition which he encountered, although, unfortunately, no details are given (*De Igne*: 124-126). In the introduction, the reader is informed that the fire of life moves everything. The spiritual fire in the form of divine light descends from the Father, to the Son, to the Holy Spirit and, thence, to the heavens from which it operates on the earth as the visible and splendid propagatory light (*De Igne*: ff. 2v-3r). The commentator explains that Khunrath has related the virtues of the philosophical fire of alchemy to those of the sun. Hence, natural fire is invigorated by celestial fire. In human-beings, the divine fire becomes the intellect, the reason and the ability to comprehend God.²⁵ In Khunrath's argument, divine light penetrates into the earth itself where it becomes darkness. In the middle sphere of the earth, divine light is tempered by the qualities of darkness.²⁶ This concept may be a possible source for Fludd's more radical theogony of light and dark in his *Medicina Catholica* (1629) in which God manifests both as "Apollo" (light) and as "Dionysos" (darkness), the source of both good and evil. Fludd similarly describes the "middle sphere" of the macrocosm as being composed of equal amounts of light and darkness (Fludd, *Medicina Catholica*, 1629: 4).

Paracelsian alchemical theory enters the discourse when the anonymous commentator explains Khunrath's equation of the divine fire with the "azoth" (quintessence), which Khunrath designates as the "Spiritus Animatus" (the spirit animating life) (*De Igne*: f. 3v). Thus, fire is a unity, but it takes both an internal and an external form; the former is natural and the latter is artificial. Neither is effective without the other. The external natural quality is the sun which operates as the inner virtue of the artificial spagyric fire in alchemy. This is a reference to Paracelsus' theory of the astral virtue of the sun within material fire (*De Igne*: ff. 4v-5r).

The main text by Khunrath commences by mentioning his earlier treatise, the *Athanor* (*De Igne*: 2-3). He elaborates on his earlier account of the Zoroastrians by further consideration of their god "ORIMASDA" whose form was that of eternal fire. Khunrath provides an account of various other religions and philosophies which have venerated the fire as

²⁵ *De Igne*, ff. 3r-3v: "In Igne vero Naturalis quidam vigor a coelestibus insitus est: In Hominibus denique sit lucidus rationis discursus, et rerum divinarum cognitio, totaque rationalis: transit inde ad phantasiam, supra sensum tamen, sed solum Imaginalibus: tandem ad sensum, maxime enim oculorum (f. 3v), in Eo sit visibilis claritas, porrigiturque."

²⁶ *De Igne*, ff. 3v-4r, quote from f. 3v: "In opacis autem virtus quaedam benefica et generans; penetratque usque ad centrum, ubi radiis eius in angustum collectis, sit caliginosus color... Et itque Ignis in coelo dilatatus collustrans: in inferno coarctatus tenebrosus et crucians:"

sacred, most of his examples being taken from the Old Testament, with some from Greek and Roman classical literature, such as stories of the Vestal Virgins, as well as other ancient sacrificial fire cults. All of these he considers to be the secret external fire of the sages (*De Igne*: 4-20).

From the very beginning of his treatise, Khunrath promotes the use of catoptrics in alchemy, by initially recalling the words of Paracelsus in Book VII of the *Rerum Naturalium de transmutatione* (*De Igne*: 26) on the degrees of heat to be used in alchemy. He relates these pyromantic theories to catoptrics, describing how the virtues of the sun are to be deployed in alchemy by means of steel or crystal mirrors. In this celestial fire the three principles of alchemy (Sulphur—Mercury—Salt) are refined.

Es ist ein Unsichtbar Feuer, darbei wir vermeinen die radios oder strahlen der Sonnen, welches Feuer durch einen stahlenen Spiegel oder Christallen sich er öffnet ... Mit diesem Feuer die Drei Principia, von einem jeden Corporalischen dinge/ frei auff einem tische/ gescheiden werden (*De Igne*: 26-27)

Khunrath continues his examination of catoptrics at length, referring also to Agrippa's description of magical mirrors in *De Occulta Philosophia* (*De Igne*: 28-32). He quotes Paracelsus once more in order to justify the use of catoptrics in alchemy, employing his concept of the "Arcanum", the hidden virtue in nature which is the true medicine (*De Igne*: 27-28). He recalls how Paracelsus had explained that the effectiveness of the "Arcanum" was dependent on the method of its preparation. This had to be undertaken during the appropriate period of the sun's cycle in order to capitalise on its beneficial rays. Since the sun is the highest "Arcanum" of elemental fire, therefore, it provides the most purifying grade of heat. The "species" of the sun exists in elemental fire and, thus, it has purifying properties. Since through the sun all things wax to their fullest potential, therefore, the nostrum of the alchemist should be: apply the sun rightly in the Catholic Chemistry. Capture it he who can.

sagt Paracelsus solche wort: ... die Sonne alle ding in das wachsen treibet/ unnd alle gewachse durch die Sonne wachsen: unnd die Sonne ist das hochste ARCANUM im Feuer/unnd der hochste reinste (ja einige essentialische) gradus dess Elementfeuers/also/das seine species mehr ist im Elementfeuer das also (Q. Essentialiter) clarificirt und praeparirt/ist/als die Sonne. Darum alle dinge durch die Sonne wachsen su hochsten. Nostrum igitur erit, Solem rite applicare operi Chymico nostro Catholico: Capiat qui potest (*De Igne*: 27-28)

Khunrath quotes Paracelsus from the *Philosophia Sagax* on the manner in which the sun generates and nurtures the elements in the same way as a

hen broods her eggs. Thus should the alchemist regulate his alchemical oven (*De Igne*: 28). He integrates Paracelsus' account of the generative powers of the sun with the catoptrical mirrors and gems used by astronomers and astrologers on Agrippa's model (*De Igne*: 34). He argues that the sun is God's fire and that philosophers obtain their flames from it, as in the case of Orpheus. In fact, Khunrath even mentions an Orphic poem which describes the lighting of a fire by means of burning-glasses (*De Igne*: 33-34). For additional support in his discussion of the alchemical use of the sun, he quotes from the Arab alchemists Morienus and Geber, as well as from the *Turba Philosophorum* (*De Igne*: 39-40) who advised placing materials in the heat of the sun to facilitate the processes of cooking, dessication, coagulation, and so forth (*De Igne*: 40). Khunrath also cites the *Rosarium* and the *Emerald Table* for the parentage of the philosopher's stone in the Sun and Moon.

The five degrees of heat employed by alchemists, according to Khunrath, approximate to the heat of the sun when it stands in the astronomical signs of Aries, Taurus, Gemini, Cancer and Leo (*De Igne*: 43). Thus, the alchemical work is a simulacrum of the sun's fire in that it promotes animation and impregnation by magnetic forces.

unnd dagegen das himmlische Sonnen Feuer, mediate, vermittelt dz. nemlich unser Materialisch kohlen oder Lampenfeuer/ Unione Physico-Magica, und Magnete Naturae Sympatico ... sit simulacrum et vehiculum LUCIS superioris, h.e. SOLARIS (*De Igne*: 46)

God is an alchemist using the sun. The same idea is the foundation of Fludd's alchemy. Khunrath in *De Igne Magorum* concludes that heavenly fire and light are God's miraculous fiery instrument, working many natural wonders in the cosmos. Similarly, the alchemist works in his laboratory by means of physico-chemistry and the rays of the sun, attracting the rays of the "anima mundi" in order to create the "Catholic" (universal) occult fire which fructifies the work by means of the hyleal "azoth".²⁷ As is the sun in God's great laboratory, so is the alchemist in his laboratory by means of sympathetic magic (*De Igne*: 52-53).

²⁷ *De Igne*, p. 50: "himmlisch feuer/und Liecht/ist JEHOVAE Instrumentum IGNEUM miraculosum in MUNDO maiore multa mirabilia naturaliter operans, Catholicon: Potest, debet, atque oportet hoc idem quoque esse nostrum (mediante, quemadmodum dictum) in Laboratorio aut ATHANORE Physico-Chymico hoc est, Microcosmo, ita loquendo, nostro artificiali, ut nimirum SOLIS huius Phylosophorum externi calore vivifico in et ad actum Operationis optatum atque fructiferum eo felicius deducatur scintilla ANIMAE MUNDI igneae IGNEA CATHOLICA que in MATERIA nostri CATHOLICI Physico-Chymici Catholic, he, AZOTH HYLEALI".

MAGNETE NATURAE SYMPATHICE HARMONICO

(*De Igne*: 53)

This section could almost stand as a synopsis of Fludd's alchemical theory. In fact, the similarities between the ideas of the two alchemists are so close that Fludd must surely have drawn on Khunrath for some of his own ideas.

Khunrath explains that the celestial fire must also be used to light the alchemical furnace, as a form of sympathetic magic (*De Igne*: 53). In this operation, he seems to intend the use of catoptrics, since later in the text he provides some general instructions on the use of the catoptrical mirror, which appears in a little drawing at the side of the text, emphasising the importance of these instructions (*De Igne*: 70). Like Dee in the *Monas Hieroglyphica*, Khunrath advises that the alchemical work should be started under the astrological sign of Aries (March) at the beginning of the New Year.²⁸ In this context, he explains how to practice Paracelsian sympathetic magic through the use of the magnet (*De Igne*: 71), also referring to another aspect of Paracelsian theurgy (in *De Tempore*) by recommending the "irradiation" of the materials. A little is enough. The process of irradiation involves the exposure of the alchemical matter to the astral rays by means of catoptrics.

welches zwar wunderbarlich/ jedoch die Weisen lehrens! zu bequemen Zeit/ durch dieses Fewrige Mittel einem jeglichen Subiecto praedisposito atque convenienti, darzu vorher wohl angeordneten unnd bequemer subiecto oder dinge/ durch Naturgemess—Magische des Philosophi handgriffe/ in momento, im Augenblick und nuh/ Leichtlich irradiet oder infundiret eingestrahlet und eingegossen werden (*De Igne*: 72)

The process of irradiation is described as the animation, "solariter", of the alchemical oils and "frumentum". The soul is introduced into the matter from the sun by means of catoptrics which draw on the "Solymischen feuers", a typical pun of Khunrath's which unites "Sol" and the celestial realms of the highest powers (*De Igne*: 73). A note in the margin of the text states that the process concerns "IGNIS Elementarium solariter animatus", the solar animation of elemental fire (*De Igne*: 73).

das Feuer im Athanor oder Kunstofen/ ... auff dass man entweder die kohlen/ gereinigtes Oleum, oder Spiritum vel vini vel frumenti, des Weins oder Getrendes Geist/ im Ofen/ darvon bald widerumb Solariter animiret, Sonnlich geschliget anzunden und geben fondte ... dass kohlen oder Lampenfeuer cum SOLE COELESTI, mit der himlischen Sonnen/ nicht nur allein in momento, fast in einem.

²⁸ Josten, pp. 162-63.

Nu/ widerumb gleich als zuvor gewesen/ harmonice maritiret ...
... 'Solymischen feuers' ... (*De Igne*: 73-74).

Irradiation, or animation, of the "materia" by means of the sun's rays unites the alchemical art with the "Archeum Naturae" and with the "scintillae" (rays) of the "Anima Mundi" (the soul of the macrocosm). The essential function of the fire of the light of nature is to fructify the elements.

Archaeum Naturae, das Essentialische oder wesenliche innere Feuer/ des
Lichtes der Natur/ der Elementen unnd ihrer Fruchten
(*De Igne*: 75)

Khunrath also speaks of the spherical alchemical glass vessel mentioned previously in his *Athanor* (although not in a cabbalistic context).²⁹ Like the magnet, the glass vessel also has an theurgic function. Nothing can be achieved so effectively as by means of the sun's fire.

Also auch in inserer Spagirischen kleinen Kunst welt/ das ist/ im Philoso-
phischen glase unnd Ofen von der Natur (auch dem Azoch) nicht das so man
verhoffet/ produciret, und herfur bracht wirt/ ohne adhibition oder anwend-
ung des Himmlischen Einfachen der Sonnen Feuer/ vermitteltst kohlen oder
Lampen/ wie bikhero recht gelehret und angehoret (*De Igne*: 97)

In relation to the fecundating power of the elemental fires, Khunrath quotes Paracelsus from Book X of the *Archidoxa* ("de vita longa") and also from his Tract VII on mineral hot-waters ("de thermis pipernis"). Another reference is taken from Paracelsus' *Paragranum Medicinae* (col. 3, "quae est Alchymia?") (*De Igne*: 79).³⁰

Khunrath's alchemical process of "irradiation" may be usefully compared with Newton's similar method of "illuminating" his chemicals, as recorded in his earliest alchemical notes written prior to 1678. Newton, in fact, may have gathered this idea from Khunrath's treatise, for he took notes from the *Amphiteratrum* and may well have read his other works. Dobbs has contextualised Newton's alchemical procedure within his optical theory, placing considerable emphasis on Newton's process of illuminating his materials in order to activate them. Perhaps rather romantically, Dobbs regarded this procedure as the "hidden secret" of alchemy.

²⁹ *Athanor* (1615), pp. 53-54.

³⁰ See Paracelsus, *De vita longa* in Sudhoff, I, 3, pp. 221-48 (in German), 249-92 (in Latin). The *Archidoxis* is found in Sudhoff, I, 3, pp. 92-200 and *Das Buch Paragranum* in Sudhoff, I, 8, pp. 31-126.

the active principle could also be, or was identical with the spirit of God that moved upon the face of the waters in Genesis. Activation might be effected by an agent totally imperceptible to the senses. There were perhaps hundreds of alchemical names for it, for it was one of the great secrets of alchemy, disguised willy-nilly in the texts.³¹

It is certainly true that this process of vivification was never clearly described by the alchemists, as in the case of the section concerning "Illuminatio" in the *Rosarium*. The illustration plainly shows the sun entering the tomb of dead matter (fig. 10), but the accompanying text speaks only of perfect circles and the astronomical role of the sun. It is Khunrath's *De Igne Magorum* which had, in fact, provided the first clear instructions for the practice of catoptrics in an alchemical context, on the basis of John Dee's technique in the *Mathematicall Preface* and the *Monas Hieroglyphica*. Dobbs argued further that

the activating agent in illumination was broadly conceived and was related to visible light more metaphorically than literally.³²

In this conclusion, she was being too cautious since the pseudo-Lullian corpus with its astrology, the *Rosarium*, Dee's catoptrical theories and Khunrath's *De Igne Magorum* all produce the impression that celestial rays were, indeed, being employed by alchemists to "animate" their materials.

In *De Igne Magorum*, as well as citing Paracelsus and the medieval corpus, Khunrath also refers to the "twelve books" of Giambattista della Porta's *Magia Naturalis*, referring, thereby, to the enlarged second edition of 1589 (*De Igne*: 94). Other authorities mentioned in his account of the astral fires and catoptrics include Hermolaus Barbarus in *Corollarium super Dioscorides ubi de Aquis in Commune* (*De Igne*: 90), Trithemius in the *Aureum vellus* (*De Igne*: 94), Joannes Pontanus and Penotus's letter to Joannes Bartholomeus Burggravius (*De Igne*: 96, 103).

The most immediate influence of Khunrath's alchemical catoptrics was on Stefan Michelspacher's *Cabala, Spiegel der Kunst und Natur* (Augsburg, 1615-1616), consisting of four engravings which represent mirrors displaying alchemical visions.³³ Apart from this Paracelsian alchemical treatise, Michelspacher also published an *Optica* (1616), illustrated by Raphael Baltens. In the *Cabala* he explains that his visions appeared to

³¹ Betty Jo Teeter Dobbs, *The Janus Faces of Genius* (Cambridge University Press, 1991), pp. 37-46, quote from p. 40.

³² Dobbs, p. 45.

³³ This was later republished as *Cabala, Speculum Artis et Naturae in Alchymia* (Augsburg: Andreas Erffurt, 1654).

him through the power of a radiating celestial fire in three distinct forms. The first mirror was a fiery sapphire, displaying the philosophical Mercury and Salt, while the second showed him the philosophical Sulphur. The third mirror was of a divinely rosy colour, all in flames, in the midst of which there appeared a very great "arcanum", which was the philosophical fire through which all things come to maturation. Putting together the three mirrors, he made a fourth in which he saw God perfectly (*Cabala*, 1654: f. B1v).

Michelspacher's concept of the inter-relationship of the celestial and elemental fires recalls Khunrath's account in *De Igne Magorum*. The fourth engraving in the *Cabala* incorporates a distinctive catoptrical motif in a Weigelian allusion to the innate and eternal Eucharistic union of the soul with Christ (fig. 23).³⁴ The crowned figure seated in the fountain of life signifies Christ as the philosopher's stone, administering communion in two chalices to the Sun and Moon (Sulphur and Mercury), representing the soul and spirit of the communicant. In the top right of the picture, there is a scene from the passion of Christ, set within the walled city of Jerusalem (fig. 24a). An angel hovers over the city, while stream of water flows from beneath its walls to feed the fountain in which the resurrected Christ is seated. This motif is an allusion to Weigel's concept of the historic figure of Christ as being the external representant of the imminent Christ. At the top left of the image is the Tetragrammaton, standing in an aureole of light. The dove of the Holy Spirit flies from the city to the symbol of God, then down to the fountain, its two lines of flight, with that of the stream of water, producing the shape of an equilateral triangle, whose apex lies in the Tetragrammaton, with the fountain and the city as the corners of its base.

The whole scene is set within the circle of the rainbow, while the fountain itself is located within a (nearly) square walled-garden. This mystical geometry is related to that of Michelspacher's first engraving entitled "Der Spiegel der Kunst und Natur" which shows two geometrical diagrams, the one on the left having the same configuration as the fourth engraving, that of circle, square and triangle (fig. 24b). In the first engraving this diagram is stated to be an image of the "Azoth", another Weigelian and Khunradian allusion to Christ. Thus, Michelspacher's adheres to Khunrath's Weigelian polemic in which union with the innate Christ as the philosopher's stone was attained through the inspiration of

the Holy Spirit. Michelspacher located Khunrath's alchemical Christology within a Rosicrucian context, for his treatise is specifically dedicated to the Rosy Cross Fraternity.

In Michelspacher's "Fountain of Life" the lines of flight of the Holy Spirit were similar to the catoptrical refraction of light-rays by the surface of a mirror. Comparable imagery of the refraction of light-rays is found in other contemporary alchemical illustrations, such as those of Robert Fludd in his various treatises (fig. 49), or of Michael Maier in the *Septimana Philosophica* (fig. 37). Such geometrical structures depicting the catoptrical reflection and refraction of light-rays became a distinctive motif in late Renaissance hermetic illustration. A slightly later example is Athanasius Kircher's frontispiece to his treatise on optics, *Ars Magna Lucis* (Rome, 1646) (fig. 25) in which the Tetragrammaton appears within a aureole of light at the top, while an owl is drawn at the top right. The figure of Apollo on the left shines his light onto the mirror of the moon, which refracts it to the earth. Another of his rays is projected onto the human senses through an optical instrument, while a third ray bounces off a mirror on the earth into a dark cave. Kircher's illustration describes the various lights of nature, the senses and the intellect.

It remains to discuss the specific influences triggering Khunrath's ideas concerning the use of astral virtue and catoptrics in alchemy. These may have been inspired by the publication of Paracelsus' complete works in the Basle edition of 1589-90, as well as the appearance of della Porta's second *Magia Naturalis* (1589). Another influence was undoubtedly Dee's cabbalistic astrology and catoptrics, as well as the enduring effects of Pico della Mirandola's and Reuchlin's Christian cabbalism. In the context of the political pressures on his pietistic beliefs between circa 1595 and 1604, these influences led Khunrath to devise a cabbalistic alchemy of light, founded on Paracelsian theosophy and Renaissance optical science.

³⁴ Peuckert and Zeller (eds), *Valentin Weigel. Samtliche Schriften* (Stuttgart, 1962-78), 2, "Von der Vergebung der Sunden oder vom Schlusel der Kirchen, pp. 29-31 (absolution and the role of Christ); 4, "Dialogus de Christianismo", pp. 7, 133-51, 320-22.

CHAPTER EIGHT

HEINRICH KHUNRATH'S
AMPHITEATRUM SAPIENTIAE AETERNAE:
THE 1595 AND 1602 EDITIONS

Khunrath's historical reputation rests largely on his *Amphiteatrum Sapientiae Aeternae*, yet this treatise has been surprisingly neglected by modern scholarship, despite the frequent appearance of its lavish engravings in popularised accounts of alchemy, such as Stanislas Klossowski de Rola's *The Golden Game*.¹ Apart from the complexity of the text and the illustrations, an additional deterrent to research is the difficulty of establishing a history for the two editions of the *Amphiteatrum* published in 1595 and 1609.

Eco has taken the lead in unravelling the threads of the book's complex history, but many issues remain unresolved. The main problem, as Eco has concluded, is that there does not exist a definitive 1609 edition of the *Amphiteatrum* since all the extant versions differ in the number and pagination of their illustrations. He argues that all available copies are composites and, even more confusing, they disagree with their description in the scholarly catalogues.² Consequently, although many editions other than that of 1609 are reported, nevertheless, Eco prefers to follow de Bure (1764) in arguing that there never was more than one edition of the final version and that was the one published in "Hanau" in 1609.³ He also considers that "Hanau" means that town specifically, rather than "Hanover" as the name is usually translated. (The present study follows Arnold in retaining the more usual "Hanover" translation, since he was closer in time to the facts of this history).

Another controversy surrounds the dating of the visual imagery. It is difficult to reconcile any of the pictures with the content of Khunrath's text.⁴ It seems that, variously, among the different versions of the 1609 edition, there exists a stock of illustrations which have been bound in

¹ Stanislas, Klossowski de Rola, *The Golden Game. Alchemical Engravings of the 17th-C* (London: Thames and Hudson, 1988), pp. 29-44. He provides reproductions of all of Khunrath's illustrations.

² Umberto Eco, *Lo Strano Caso della Hanau 1609* (Milan: Bompiani, 1989), p. 5.

³ Eco, p. 18.

⁴ Eco, p. 11.

different arrangements. The visual repertoire consists of Khunrath's portrait (fig. 26), four images in a circular format (frontispiece and figs. 32, 33, 34), as well as five images taking a rectangular form. In addition, there is an elaborate frontispiece and also an emblem of an owl (fig. 28), wearing spectacles and carrying flaming tapers. Eco argues that the four images which take a circular format originated in the 1595 edition. The rectangular images are self-dated on their frames at 1602, being intended for a version of the *Amphiteatrum* which was prepared to be issued in either 1602 or 1604. A final edition was prepared posthumously for 1607, but it did not appear until 1609.⁵

The problem of determining Khunrath's intentions for his work is complicated by the different dates appearing on the various component texts of the 1609 edition. There is one epilogue dated at 1602 and another dated at 1604, while the editor's foreword is dated 1607. Thorndike has noted that a sketch of the first version of the *Amphiteatrum* was published in Hamburg in 1595. Following his argument, Eco considers that only two versions of Hamburg 1595 still exist, in both cases containing the four circular images.⁶ One of these editions now belongs to the Duveen library at the University of Wisconsin,⁷ while the other copy is located in the University Library Basel. The Basel version comprises an elaborate frontispiece, the four circular illustrations and fewer pages of text than the final 1609 version, as well as two copies of the epilogue. A very important point which Eco makes is that the Basel *Amphiteatrum* may have been the edition intended for publication in 1602. In addition, Gilly mentions two other extant copies of the 1595 *Amphiteatrum*, one in Darmstadt, while the other is, most significantly, a hand-written copy by Johannes Friedrich Jung, the first publisher of Andreae's *Chymischen Hochzeit von Christian Rosenkreutz*. Jung made his copy of Khunrath's treatise in 1602, including his own adapted version of the 1595 illustration of the praying alchemist by de Vries. Gilly rightly cites this item as being evidence of the substantial influence of Khunrath's treatise on Andreae's circles.⁸

⁵ Eco, p. 11. Klossowski de Rola reproduces all of Khunrath's 1602 imagery, see *The Golden Game* (1988), pp. 34-38.

⁶ Eco, pp. 31-32.

⁷ Eco, p. 23.

⁸ Eco, pp. 24-25. Gilly, *Cimelia Rhodostauronica* (1995), p. 13, see Item 12 which is the title-page of the 1595 Hamburg *Amphiteatrum* from the Basel University Library. Jung's copy is Kongelige Bibliotek Kopenhagen, MS GKS 1765 4o. For his version of de Vries' engraving of the Oratory-Laboratory see Gilly (1995), p. 14, Item 12b. The original layout of de Vries' engraving in 1595, with its accompanying texts is shown in Gilly, *Das Erbe der Christian Rosenkreutz* (1988), opp. p. 18.

The "Isagoges" (commentaries) which accompany the 1609 edition, correspond to the texts originally located around the edges of the 1595 circular engravings. In the Hamburg 1595 edition, the circular engravings are dated and inscribed as having been engraved by Paul van der Doort di Anversa in that year, but the dates have been removed from the Hanover 1609 illustrations (frontispiece and figs. 32, 33, 34).

In his summary, Eco has concluded that Khunrath produced an early version of the *Amphiteatrum*, the one which was printed at Hamburg in 1595, consisting of twenty-five pages of text and four circular illustrations. In addition, there may have been another edition published in 1602, for which an epilogue was written and a frontispiece engraved, both of which are self-dated at 1602 and this would have also included the four rectangular illustrations. The second epilogue written in 1604 may have been intended for another edition of the treatise which was meant to be published in that year. In short, Eco argues convincingly, all the existing second editions of the *Amphiteatrum* are Hanover 1609 which always includes the two epilogues, as well as an inconsistent selection of the illustrations. Eco plausibly suggests that, in fact, the illustrations may have been circulated separately from the text of the *Amphiteatrum*, different images being selected from the general repertoire by different binders. The 1609 edition is not rare and it may be found widely dispersed in European libraries.

Both the 1595 and 1609 editions are a commentary on three-hundred and sixty-five biblical verses taken from the Old Testament books of *Proverbs* and *Wisdom*. Khunrath provides two versions of the biblical texts, one from the Vulgate and another which is his own translation from the Hebrew (*Proverbs*) and Greek (*Wisdom*). A further important aspect of Eco's study is his suggestion that in 1602 Khunrath rewrote the text of the *Amphiteatrum*, which led him to date accordingly the epilogue and frontispiece.⁹ As in the case of the *Athanor* and *Chaos*, the Imperial Privilege of 1 June 1598 was used to cover the publication of the *Amphiteatrum Sapientiae Aeternae* in 1609. After Khunrath's death in 1605, Erasmus Wolfart, assisted by Guglielmo Antonio, took this edition to its final printing and added his own introduction dated at 1607. Wolfart belonged to Arndt's circles since Gilly mentions a letter written to him by Arndt, "Von dem grossen Geheimnis der Menschewerdung", praising Khunrath's illustrations.¹⁰

An additional factor to consider in this history is the existence of yet another version of the 1595 *Amphiteatrum* which may even be a copy of

⁹ Eco, p. 34.

¹⁰ Eco, p. 35: Gilly, *Cimelia Rhodostauronica* (1995), p. 13.

the projected 1602 edition. Neither Eco, nor Gilly, refer to this item which is a manuscript, MS Alnwick 571, held in the library of Alnwick Castle, the family seat of the Dukes of Northumberland. Although it has been transcribed in a late sixteenth to early seventeenth century secretary-hand by at least three different scribes, unfortunately, it cannot be assumed that the manuscript entered the library at that date. Henry Percy, the eighth Earl of Northumberland, dispatched scribes to the continent to copy selected works, but a large collection of occultist manuscripts was also donated to the ducal library in the eighteenth century and these may have included the *Amphiteatrum*.¹¹

MS Alnwick 571 consists of fifty-five folios, many of which have been left blank as if the manuscript was an incomplete transcription of another text. The wording of the frontispiece is the same as that of the Basel University copy of 1595 and the text is self-dated on the title-page at 1595. The manuscript contains copies of four engravings from the *Amphiteatrum* which include, it seems, one of the 1602 rectangular images, while the other three are copies of the 1595 circular engravings. In the sequence of illustrations in MS Alnwick 571, there first appears a completed copy of the 1595 Anthropos-Christ standing in the midst of the cabalistic universe (fig. 32, 1595 original), followed by an incomplete image consisting of nothing more than Latin aphorisms, with no pictorial content. It is important, however, to note that these aphorisms are an exact transcription of those appearing in one of the 1602 rectangular images where these same words are written on rays of light emanating from a tunnel piercing a mountain-side (fig. 31). As in the 1602 original, the Latin aphorisms in the Alnwick manuscript are organised into the shape of a semi-circle, following the sequence of the 1602 exemplar. No other attempt has been made to copy the engraving.

The third drawing in MS Alnwick 571 is a meticulously rendered copy of the 1595 circular image of the "Rebis", including all the original texts (fig. 34, 1595 original). The drawing represents a hermaphroditic figure, crowned with a peacock, carrying a sphere which symbolises the Paracelsian alchemical macrocosm of the four elements and the three principles. Below it there appears the globe of the earth, on which there is drawn a map of Europe, Asia and Africa, within which there is yet another globe, that of "CHAOS". At the top of the outermost circle around this figure, stands the Tetragrammaton, accompanied by the Pythagorean equilateral triangle, composed of ten dots in a pyramidal form. The illustration refers to the necessity of reducing all things "ad monadis simplicitatem",

¹¹ I would like to thank Mr. Colin Shrimpton, archivist at Alnwick Castle for this information.

also mentioning the "azoth", the "celum" and the "ros celi". In comparison to the original engraving, the Alnwick drawing is amateur, for the scribe has ineptly splayed the original image across two facing folios of the manuscript, failing to reproduce the exact dimensions of the original.

The final "drawing" in the Alnwick sequence consists merely of text alluding to "working and praying", which could be a bare mention of de Vries' 1595 circular image of the praying alchemist (frontispiece). Given the difficulties which the scribe experienced in copying the diagrammatic scheme of the "Rebis", maybe he abandoned all hope of undertaking with any success a copy of de Vries' sophisticated design.

One circular image from Khunrath's 1595 *Amphiteatrum* is altogether absent from MS Alnwick 571, that of the Lullian circles ruled over by the "Archetypus" (the Tetragrammaton) (fig. 33). Neither are Khunrath's portrait (fig. 26), nor the 1602 frontispiece recorded, but, at the end of the Prologue, the Alnwick text includes expositions on the visual images which are similar to the 1609 Isagoges. There is also a set of "Questions" which are the same as those in the 1609 edition.

What is it possible to determine concerning the original exemplar of MS Alnwick 571? Primarily it should be noted that the text, self-dated at 1595, is the shorter Hamburg edition. In spite of this fact, the scribe must have been copying from a version of the *Amphiteatrum* compiled in 1602, since he refers to one of the rectangular engravings. Furthermore, the Isagoges (although they are not named as such) appear in exactly the same location as in the 1609 edition, that is, separated from the circular engravings and placed at the end of the prologue. Finally, the text includes an epilogue. The problem of establishing the character of the 1595 and 1602 editions requires much closer scrutiny of the five extant versions of the *Amphiteatrum* of 1595. For present purposes, however, attention will be drawn only to those details in MS Alnwick 571 related to the immediate argument.

MS Alnwick 571 opens at a double-folio title page. At the top of the left-hand page (verso), there is a Hebrew text which subsequently was re-located to the base of the 1602 frontispiece.¹² The text of the manuscript

¹² MS Alnwick 571 is unpaginated, but paragraphs are numbered sequentially. The title-page (folio verso) states the intention of the work and mentions four illustrations: "ORATORIO et LABORATORIO, micro ac macrocosmice, artificio mirifico sapienter administrantium; secundum Christianae et philosophicae veritatis novinam a diabolicis sophismatum execrandorum, pro veritatem Catholicaque, dexteritate, ad Archetypi exemplar reformatorem ... recens absolutum, exornatum figuris quatuor theosophicis, forma Regali in affabre scalptis, in publicum vix missendum, ne margaritae proijciant parvis diabolo obsessis: ... in liquido speculo Theosophiae ostendus". On folio recto is given the date of the work: "Anno MASCHIAEH juxta promissione missi, MDVC aetat XXXV".

is described as a "Prologue" and at the end of the transcription, there is an admonition that one should not make an opinion by reading only one book of the work, the same statement re-appearing in the 1609 edition. The Prologue commences by explaining that Khunrath has provided annotations of both the old and the new translations of the *Book of Solomon* from the Hebrew and of the *Book of Wisdom* from the Greek.

The alchemical programme of the Alnwick text is Christocentric, based on Khunrath's theme of the divine light of Eternal Wisdom in relation to the two levels of alchemy, material and spiritual. The text begins with a comparison between the earthly sun and the divine sun of Christ (Par. 18-19). In the words of *Wisdom*: 16. 20, Khunrath urges the reader not to adore the visible image (the sun), but only the spiritual light of God (Par. 18). In the same section he speaks of the "aurora", referring to the cabbalistic concept of the dawning of spiritual illumination and salvation,¹³ mentioning, in passing, the name of Johannes Campanensis. He then refers to the "secunda huius Amphiteatri figura" which is not, unfortunately, an allusion to the second illustration in this particular manuscript (Par. 21). The reader is informed that Divine Wisdom is the light which we see through-out the day, as the source of both fire and water and of fructification.

Tota die/ tota visa omnibus diebus visce luce: est TUNC, (non prius) SAPIENTIAE ... et aquae (montis vellere) et ignis (cordis ardore)—pluviam concipies (Par. 21)

From the outset, Khunrath vehemently attacks any false prophet who obstructs true philosophy as a "calomedicus, pseudophysicus, sophista", but the debates of these "haeretici" (Par. 24) encompass only the "Sapientia mundana", rather than Divine Wisdom itself. Khunrath mentions again the second figure of the *Amphiteatrum*, explaining that it portrays the wisdom of the Magi and the cabbalists from the East, signifying the font of life which is God.

¹³ Jacob Boehme in the *Aurora* develops the concept of the seven days of creation in *Genesis* as signifying the emanation of the sephiroth on the Tree of Life. In the cabbalah the sun signified the spiritual source of salvation, as the symbol and modum of the creative demiurge or Anthropos. Boehme christianised this concept into that of the Son of God who through the sun generated the redeeming "light of nature". Boehme derived the general structure of his theosophy from Paracelsus, see Deghaye, "Dieu et la Nature dans l'Aurore de Jacob Boehme" in Faivre and Zimmermann (1979), pp. 125-56. See also Peuckert, *Jacob Boehme. Samtliche Schriften* (1955), 1, pp. 187-206, 263-284 and Frick, *Die Erleuchteten* (1973), pp. 124-28. In the above section of text, Khunrath is referring to the same cabbalistic and Paracelsian theology.

unitur DEO: ad vitae in fontem, SAPIENTIAE oceanum, feliciter deducunt Magos, Cabalistas ex Oriente (Par. 31)

In the following section, he recalls the fathers of the Church, such as Cyprian (Par. 32), moving immediately to equal approval of Agrippa and the cabbalah. He states that God himself opens our eyes through the illumination of the cabbalah (Par. 35).

There is yet another reference to "BINARIUM (ut est figura Amphiteatri huius secunda)" (Par. 39), which is a reference to Christ as the "MONAD", in his dual nature of human and divine.

BONUM Summum (DEI DONUM) Homini ad Monadis simplicitatem reducto (Par. 43)

Within this cabbalistic discourse on Christ, drawn from the model of Reuchlin,¹⁴ Khunrath explains the "Medicina Catholica" produced by the philosopher's stone which transmutes "metalla inferiora in superiora h. e. in argentum et aurum" (Par. 46). The "Medicina Catholica" transforms age into fruitful glory by means of the sun of the philosopher's stone in a Christian cabbalistic way. This is said to be explained in the third figure of the *Amphiteatrum*. From the context, he seems to be alluding to the 1595 circular engraving of the Anthropos-Christ in the midst of the cabbalistic cosmos of light and fire (fig. 32).

Via eiia pulchra SAPIENTIA soror mea, ob veritate in Doctrina et Laboribus : Pacifica sibi pax, quia animi irrequietudinem, etiam super physicoartificialis (de qua tertia huius Amphiteatri figura, sub numero 1, probat 5) fructuose sedat, de sidium ardens sufficient ... et hominem totum tranquillum, quietum, ac vera pace ... internae et externe pacificum reddit (Par. 46)

He proceeds to discuss the nature of a fruitful and long life (Par. 47) which recalls Paracelsus' discussions of the same topic in relation to his theory of the "quintessence" ("coelum homini").¹⁵ Khunrath specifies an image in the *Amphiteatrum* portraying the alchemist as both pious and hard-working (Par. 48), which could only be de Vries' picture of the alchemical laboratory (frontispiece).

He refers to Christ as the incarnate, yet eternal, Word of the New Testament, "Sapientia aeterna, in seculo incarnate" (Par. 48). Then he acknowledges Erasmus of Rotterdam (Par. 51), as well as the *Pymander* of

¹⁴ Reuchlin, *De Verbo Mirifico* (Stuttgart, 1964 facs. of 1494 ed.), pp. 95-103 and *De Arte Cabbalistica* (Stuttgart, 1964 facs. of 1517 ed.), pp. 143-55.

¹⁵ Paracelsus, *De vita longa* in Sudhoff, I, 3, pp. 221-48 (in German), 249-92 (in Latin). See also Pagel, "Paracelsus als "Naturmystiker"" (1979), pp. 91-92.

Hermes Trismegistus and Julius Caesar Scaligerus (Par. 53). Khunrath admonishes true Christian alchemists that they should be meditating, praying, walking, reading scripture, as demonstrated in the second, third and fourth figures of his treatise (Par. 71). In contrast, he attacks blasphemers and black-magicians who operate with the sign of the pentacle, directing his reader, instead, to the fourth figure of his treatise in which there appear the proper, truly spiritual, figures which are to be used in alchemy. This is probably an allusion to the 1595 engraving of the Lullian-cabbalistic circles of the "Archetypos" (fig. 33), which is, however, absent from MS Alnwick 571.

Hic ANNULUM assistentia spiritu boni, Theosophorum: (In Tabulis Cordis) Hoc Pentaculum Solo novis virtuosum, non illud Nigromanticorum seu Cacomagorum phantasticum, atque blasphemum: est collo mentis luce suspendenda. Vi de figura Amp. huius 4a (Par. 74)

From Pythagorean geometry, Khunrath moves into the field of cabbalism, mentioning two sephiroth on the Tree of Life, those of "HHOCH-MAHEL" and "BINAHEL" (Par. 75), as well as the cabbalistic practices of "Notarikon" and "Gymetria" (Par. 81). In passing, he names both pagan and Christian philosophers, Socrates, Cicero and Tertullian (Par. 84), returning to the theme of "Orando et Laborando" in relation to the second and third figures of the *Amphiteatrum* (Par. 85).

In the following section, Khunrath's Paracelsian and Christological discourse is very similar to that in the *Chaos* (1597). First, however, on the Paracelsian model, he considers the central fires within the earth.¹⁶

Centrum Terrae physice, ubi fit, Vulcan. Is ex quibus corpore terreno, obstericaute Neptuni limpidissima ... candidissimum Physico Chemice manifestando, ad sensum omnes tibi demonstrabit: Videbis illud: fig. 3 (Par. 111)

Khunrath next instructs the reader that the philosopher's stone is Christ and that God is reconciled with humanity through Christ's sacrifice on the cross. The cross of Christ is the "Salt" which conquers demonic realms. He mentions vitriol, thus, in Weigelian terms, integrating Paracelsian alchemy into his Christology and referring the reader to the first figure of the treatise for an explanation of these analogies.

Crux Sancta Christi ipse crucifixus, fig. Amph. huius prima Cruciformit vincens diaboli regnum ...
= SAL
Sapientia antiquissimum vitriolum naturae catholicon (Par. 237)

¹⁶ Paracelsus, *Opera Omnia* (Cologne: Huser ed), 2, p. 150.

Returning to the cabbalistic system, Khunrath describes the ten cabbalistic sephiroth as "scintilla et radii divinalis". Eternal Wisdom creates the macrocosm and microcosm by means of "TSUMMUM" (or "zimzum" which is the zigzag descent of divine light down the Tree of Life). He describes the emanation of the sephiroth to God's act of viewing himself in a spotless mirror, since the Divine, Eternal Light is the archetype of creation.

Lux Divina Aeterna, ab aeterno ... erit igitur Sapientia ... aeterna ... Speculum sine macula, et quui surgitur Speculo eiusque, typo reali in Macro et Microcosmo, TSUMMUM (Par. 239)

In a further development, Khunrath associates Paracelsian cosmology with his own first figure of the *Amphiteatrum*.

omnia sua sigilla DEUS, ... VERITAS, Dei Sigillum (Par. 240)

It needs to be recalled that John Dee also used the "sigillum Dei" in his angelic magic and similarly accused false magicians of practising theurgy by means of the pentacle.¹⁷

Khunrath declares that God is terrible like the sun (Par. 242) and there succeeds a long disquisition on the nature of light which is comparable to his argument in the *Chaos* and *De Igne Magorum* (Par. 248). The "SOL VERITATIS" is God, while the ardent spirit of the "anima mundi" is the "ruach Elohim" (the Creator-God). Khunrath also uses the term "celum", adopting Rupescissa's term for the fifth essence, thus, cabbalistically assimilating the refined spirits produced by distillation into the concept of the fiery spirit of God animating nature.

SPIRITUS ARDENS ANIMA MUNDI NATURA = RUACH ELOHIM.
SCHAMAIM sive CELUM (Par. 277)

The text follows Paracelsus on the nature of the four elements, specifically the "proto-elements" which are the primal qualities of the four common elements.¹⁸

In MS Alnwick 571, the text of the Prologue is succeeded by the copies of the four illustrations of 1595 and 1602. The textual explanations of these images in the Alnwick manuscript subsequently re-appear in Hanover 1609 in a comparable version as the Isagoges.

The simple, almost note-like form of the *Amphiteatrum* in the Alnwick version is expanded into the far more complex Hanover edition of 1609.

¹⁷ See Szonyi (1999).

¹⁸ Sudhoff, I, 13, *Philosophia ad Athenienses*, pp. 389-423, see esp p. 406.

In rewriting his masterwork, Khunrath involved himself in a labour of such ardor that it may have cost him his life. To fathom his motivation in shouldering such a burden, it is necessary to consider the political context of German hermeticism in the early seventeenth century.

CHAPTER NINE

HEINRICH KHUNRATH'S
AMPHITEATRUM SAPIENTIAE AETERNAE:
 THE EDITION OF 1604 (PUBLISHED HANOVER, 1609)

The theoretical programme of the *Amphiteatrum* of 1604 (published Hanover, 1609) is more elaborate than that of 1595. In particular, the prologue has been rewritten to form an account of seven stages of ascent towards Divine Wisdom, while the contents of the former prologue have been extended into a lengthy new section and renamed the "Interpretationes et Annotationes". In the 1604 version, Khunrath retained the "Isagoges", "Corolloria" and epilogue of 1602 to which he added another epilogue dated 1604. There is also a foreword by the editor, dated 1609, as well as poetry and epigrams by Khunrath's admirers. Finally, a new title-page explains the revision of the treatise and the appearance of a new set of engravings as being an attempt to justify the piety of Khunrath's intentions against his detractors.¹ The foreword by Wolfart records that Khunrath died prematurely, leaving him to complete the editing of the treatise, implying that problems were encountered in the production of the work, though no clear picture emerges of what these may have been.² Due to the scarcity of primary documentation related to Khunrath, it is mostly the internal evidence of his texts which provide clues concerning the political struggles arising from his ideological position.

On the dedication page, Khunrath presents a "theosophical oration" addressed to Jesus Christ,³ thereby, from the outset, he is conceptualised as an actor taking part in a staged performance directed at a community of pious, Christian theosophists. This theatrical atmosphere is emphasised by the inclusion of a long encomium near the beginning of the work in honour of the founders of theosophy, Reuchlin, Agrippa and Paracel-

¹ Heinrich Khunrath, *Amphiteatrum Sapientiae Aeternae* (Hanover, 1609), p. 6 (as in MS Alnwick 571): "recens revisum, AMPHITEATRICE instructum QUATUOR circularibus, aliisque hieroglyphicis FIGURIS, in aes affabre sculptis, VERITATIS, passim locorum, sine pudore vim publice patientis iniquissimam et quasi sub calumniarum pondere fatiscendo ingemiscens, fere (proh !) succumbentis, ab interitu, pro viribus, vindicandae ac erigendae causam: et, quo aliis bonis atque haud vituperanda praeberetur, in publicum, ex pio animo affectu".

² Khunrath (1609), foreword by Wolfart, pp. 9-10.

³ Khunrath (1609), p. 17: "Oratorio Theosophica Ad Fontem Sapientiae Christum Opt. Maximum Christiani Cordati".

sus. Its main theme is that of Paracelsus as the German Phoebus, the source of spiritual and intellectual illumination.⁴ Moreover, the encomium pictures the *Amphiteatrum* as a theatre of divine light in which the passive spectator is turned into a spiritually enlightened participant in the course of the action.⁵ This image is based on the Paracelsian theory of the imagination as a means of attaining spiritual union with the celestial realms. Hence, Khunrath's engravings in the *Amphiteatrum* are "stage-sets" into which the consciousness of the viewer is absorbed. By imaginatively performing within these scenes, that is, by following the spiritual instruction of the imagery and their texts, the viewer enters into a contemplative state leading to "gnosis". Subsequent to the encomium, there is an epigram in praise of Khunrath, written by Johannes Seussius of Dresden to the Elector of Saxony in 1604, which similarly locates Khunrath's alchemical theory within the spectacle of a macrocosmic theatre.⁶

The rhetorical devices of Khunrath's engravings may be usefully contextualised within Yates' account of the Renaissance stage as signifying the union of the macro and microcosms. Within this theatrical setting, the microcosmic human actions were dominated by the stars painted on the ceiling above the stage. Yates also argued for the powerful effect on German hermeticism of travelling groups of English players,

⁴ Khunrath (1609), pp. 11-13.

⁵ Khunrath (1609), p. 12:

haec Lux, haec dux te praeuia ducet
Abdita cunctarum subito ad penetralia rerum,
Et sic mirifici non pondus inane Theatri
Non spectator iners, verum Rimator et Actor
Intimus hospes eris, non hospes semper oberrans.

⁶ Khunrath (1609), pp. 14-15. The poem reads:

Mundum extra mundum qui vult specularier omnem
Quique extra seipsum noscere se satagit:
Non opus est adeat veterum vastata Theatra
Vel nova, spectaclis reddita vana suis.
Immundum potius mundum exuat, exuat et se,
Indupeditrices et fugiat nebulas.
Orchestramque tui subeat KUNRADE Theatri
Aetheris igniculo praegrediente bono.
Dia ubi smaragdi monstrat Sapiencia speculo
Quid Macrocosmos agit, quod Microcosmos agat.
Et Panace Hermetice regnatque Asclepia Hygeia
Ac dignis dignas utraque spargit opes.
Quas patulo, Invidia pandis stomachante Theatro
KUNRADE ingenui progenies Genii.
Perge ita: firma tui basis est mansura Theatri,
Dum Macrocosmus erit, dum Microcosmos erit.

particularly relating her argument to the work of Johann Valentin Andreae.⁷

Limon has examined in more detail the history of English theatrical activity in central and eastern Europe in the early seventeenth century. The first recorded professional group, the Earl of Leicester's men visited Gdansk in 1587, followed by successful residencies in Prague from 1596 by troupes belonging to Robert Browne and Thomas Sackville. The work performed does not appear to have been concerned with religious politics, since it was mostly a condensed and highly gestural version of contemporary English plays aimed at a German-speaking audience. Yates' case for the radicalising effect of the English theatre on religion is more applicable to the late 1610s and the Bohemian campaign of Elector Frederick of the Rhenish Palatinate. In the case of Khunrath, it seems more probable that he discovered the possibilities of the theatre as a rhetorical tool by viewing the performances of German and Italian actors at the court of Rudolph II in Prague prior to the mid 1590s, by which time he seems to have returned first to Hamburg and then to Magdeburg. He may, however, have seen English staging devices in Dresden since he had connections with both the Saxon consistory at Dresden and, from the evidence of Seussius' epigrammatic address to the Elector, also with the court. Limon records that there exists some indirect evidence that a group of English players had visited Dresden in late 1586-87, although he considers that regular performances by the English in Eastern Europe occurred only after 1600.⁸

Khunrath, nevertheless, may have seen examples of the advanced staging devices of the English theatre prior to 1600 at unrecorded public performances by English adventurers. Since the staging and dramatic ability of the actors greatly impressed their European audience, such encounters with the English theatre in the late 1590s could have inspired him to extend his graphic repertoire in 1602, incorporating more rhetorical texts and extensive scenic backgrounds in the new engravings. The English were especially famous for their "perspective" back-drops, which were painted onto a long length of canvas and wrapped around a cylinder which was unrolled in the course of a performance. Although Limon considers that this device belongs to a much later period of English activity on the continent (the 1640s), crude proto-types of such machinery may have been toured prior to that time. In the case, however, of de

⁷ Yates (1969), pp. 143, 159-61 and Yates (1986), pp. 50, 60, 73, 140-44.

⁸ Jerzy Limon, *Gentlemen of a Company: English Players in Central and Eastern Europe, 1590-1660*, (Cambridge University Press, 1985), pp. 29-33, 37, 107-16.

Vries' Oratory-Laboratory engraved earlier in 1595, the back-ground, with its prominent architectural motif of a screen, argues for an influence more from the private court-theatre in which performances were staged in front of the dividing-partition at the end of the hall, enabling the actors to use the door as an entrance from a make-shift dressing-room.

Whatever his direct sources, Khunrath clearly realised, as did Andreae and the later Rosicrucians, that a theatrical spectacle could provide a rhetorical validation of their politicised hermeticism. For the same reasons, according to Obrist, visual illustrations had been employed by late medieval alchemists in order to deflect scholastic criticism from their ideas, since the graphic realisation of an alchemical discourse provided evidence of its validity.⁹ Khunrath aimed to reinforce the rhetorical potential of his imagery by locating it within a theatrical atmospheric of "live" performance, an even more seductive artistic medium. As Seussius explained in his poem, the function of Khunrath's engravings was to instruct the viewer in the most elevated knowledge by enabling him to see the super-celestial levels of Being.¹⁰

After the introductory eulogies on behalf of Khunrath and his theosophical predecessors, there follows a long prologue, divided into seven sections examining the seven stages of wisdom, which are also illustrated in one of the rectangular engravings of 1602 showing the adept's progress through a dark tunnel in a mountain towards the light at the far end (fig. 31). The imagery of the mountain and the light of the divine presence recalls Reuchlin's cabbalistic interpretation in *De Arte Cabbalistica* of the sacrifice of Isaac by Abraham on the mountains of Moriah (*Genesis*, 22). After the angel Raphael had prevented this, a covenant was agreed between God and Abraham which was subsequently reinforced by God in Jacob's vision of the open gates of heaven and the ladder between heaven and earth (*Genesis*, 28). Reuchlin had explained the concept of the ladder in cabbalistic terms as being that of the sephirothic angels, with whose aid a human-being could make his way to God.¹¹ Khunrath's picture in the *Amphiteatrum* is based on Reuchlin's interpretation of these stories as

⁹ Obrist, pp. 55-65, 248-49.

¹⁰ Khunrath (1609), p. 16:
Hoc te docebit inclytum Theatricum
Opus hoc, et plane mysticum,
Aeterna monas et trias corde tuo
Fac insit, hunc finem bonum
Scopum que monstrant haec tibi spectacula,
Quibus Deo potes frui?

¹¹ Reuchlin, *De Arte Cabbalistica* (Stuttgart, 1964, facs. of 1517 ed.), p. 152. Khunrath's engraving is reproduced in Klossowski de Rola, *The Golden Game* (1988), p. 34.

symbolising the "unio mystica" with Eternal Wisdom in the soul of the cabbalist.¹² Another engraving from the 1602 series, also entitled the "Porta Amphiteatri Sapientiae Aeternae", is a visualisation of Reuchlin's cabbalistic mysticism in *De Arte Cabbalistica* where he had frequently mentioned the "Portae Lucis", the gates of light, of which the sun is the portal. In this illustration, there also appears a mountain (probably Abraham's Moriah), while on a beam of light emanating from the Tetragrammaton are the words "cum numine lumen, et in lumine numen" (with [God's] power there is light and there is [divine] power in light).

Throughout the *Amphiteatrum*, Khunrath praises Christ whom he identifies with "lumen" (the primal, spiritual radiance of God) which is materialised on the earth through the solar rays. It will be recalled that Boehme in the *Aurora* makes a similar identification of the Son of God with the "lumen" transferred by the sun to the physical world, deriving this concept, like Khunrath, from Reuchlin and also from Paracelsus.¹³

Influenced by Reuchlin's illuministic imagery and his biblical references, Khunrath structures the prologue of the *Amphiteatrum* by means of quotations on the spiritual and natural light from the Old Testament books of *Proverbs*, *Wisdom* and *Psalms* (Hanover, 1609: 19-60). The prologue has no imminent alchemical content, but it introduces those biblical references (Khunrath, 1609: 1-183) which are interpreted alchemically in the following sections, graded according to seven stages (Khunrath, 1609: 20-22). In the "Gradus Secundus" of the "Interpretationes", Khunrath quotes from *Ecclesiastes* that light is sweet and that it is delightful for the eyes to see the sun (Khunrath, 1609: 38).¹⁴ This quotation formulates the mystical intention of the treatise which is to enable the viewer to perceive the sacred vision of the Son of God, for Khunrath then identifies "Lux" (natural light) with Christ as the Sun of Justice. Light, thus, is the vestment of God which may be discerned in the philosopher's stone as the alchemical sun.

Summa, purissima, immaculata LUX DEUS est, LUX vera Christus est, et Sol Iustitiae: LUX et LUMEN SAPIENTIAE, Spiritus sanctus est ... LUX est amictus, est vestimentum Dei ... et admirabile illud VRIM in LAPIDE Benedictus, Sole Philosophorum cernere (Khunrath, 1609: 38)

¹² Reuchlin, *De Arte Cabbalistica* (Stuttgart, 1964, facs. of 1517 ed.), pp. 132-33 and *De Verbo Mirifico* (Stuttgart, 1964, facs. of 1517 ed.), p. 64. See also Busi and Campiani (eds), *Johannes Reuchlin L'Arte Cabbalistica* (1995), pp. 36-37.

¹³ Deghayé, "Dieu et la Nature dans *L'Aurore Naissante* de Jacob Boehme" in Faivre and Zimmermann (1979), pp. 129-31; Frick, *Die Erleuchteten* (1973), pp. 124-28.

¹⁴ In the *Revised English Bible* (Oxford and Cambridge UPs, 1989) this quotation is from *Ecclesiastes*, 11: 7.

In the "Gradus Quartus", Khunrath commences a discussion of the nature of the sun as an image of God and the source of spiritual salvation, as both the interior and the exterior sun. The Wisdom of the Father is the true bread of life ("manna") which is Christ.

Et quia Jesus Christus, verbum Patris est, et Sapientia Patris; igitur verum manna est Christianorum credentium (Khunrath, 1609: 79)

In the "Gradus Quintus", Khunrath relates "lumen" to the cabbalistic sephiroth "Hochmah", Divine Wisdom, declaring that it is the lantern which illuminates his mind, hands and feet, micro- and macrocosmically in both his oratory and his laboratory.

Sis oro Hhochmael, SAPIENTIA DEI lux et lucerna menti, manibus ac pedibus meis; in Oratorio utroque, (Micro ac Macro- cosmico) et Laboratorio, meis (Khunrath, 1609: 112)

He also quotes from *Wisdom* 9: 10.

Send her down from your holy heaven, and from your glorious throne bid her come down, so that she may labour at my side and I may learn what is pleasing to you.¹⁵

Khunrath interprets this in terms of the eternal fire (the quintessence or "caelum") pervading the three levels of creation, those of nature, the firmament and the celestial spheres, stating that this was known to the ancient philosophers and theologians as a fiery water, or a watery fire (Khunrath, 1609: 129). He recalls the cabbalistic interpretation of *Genesis*, I, i, in which the Elohim created the world by means of the "caelum", or "schamaim" (Khunrath, 1609: 127-34).¹⁶ The whole world is filled with the "schamaim" which penetrates all the sublunary bodies.

SPIRITUS ARDENS. Ein Geistfeuriges wasser: Ein wasseriger feuriger Geist; Ein feweriges Geistwasser; LATEX AETHEREUS: ... HOC in totum UNIVERSUM mundanum tripliciter distribuit ELOHIM (Khunrath, 1609: 127)

Khunrath describes a Paracelsian cosmos in which the macrocosmic "caelum" generates the physical species,¹⁷ while in its lower material form, the "caelum" is the chemical spirits of wine, purified by fire and

¹⁵ Khunrath (1609), p. 127: "Mitte illam de Coelis sanctis tuis, et a sede Magnitudinis tuae, ut mecum SIT mecum LABORET, ut sciam quid acceptum sit apud TE". Translation from the *Revised English Bible* (Oxford and Cambridge UPs, 1989).

¹⁶ There is a similar account in the *Chaos* (Khunrath, 1616: 75).

¹⁷ Khunrath (1609), p. 133: "Est causa omnium, quae gignuntur; Confert Formam et Speciem in materiam apparatus immittit; Regit omnia, quae hic continet Mundus; foecundat femina; Omnis foecunditas ab Coelo spargitur;"

released from impure matter.¹⁸ In "Gradus Quintus" and "Gradus Sextus", Khunrath explains further the astrological basis of his Paracelsian alchemy, referring to Paracelsus' interpretation of the creation of the stars in *Genesis*, 1. He explains that all natural objects manifest various signs, constituting an alphabet in the book of the world,¹⁹ produced by the innate "astra", mirroring those in the heavens (Khunrath, 1609: 142). The alchemist must, therefore, know astronomy and watch the progress of the seasons.²⁰ Khunrath refers specifically to Paracelsus' "doctrine of signatures", calling him the "Germanicus Asclepiades" and quoting him on reading the book of nature. In this context, Khunrath also names Petrus Ramus, as well as "Johannes Baptista Porta", recalling della Porta's defence of the "doctrine of signatures" in Basel on 24 August 1588 during his disputation for the doctorate of medicine (Khunrath, 1609: 152). In relation to the "signatures of nature", Khunrath also discusses theurgic sigils and magical figures, also probably drawing on Paracelsus.²¹

Khunrath provides a further Paracelsian account of the astral virtue in the third Isagoge and its set of alchemical queries (Khunrath, 1609: 187-207). In Question IV, he asks,

¹⁸ Khunrath (1609), p. 127: "Totus globus inferior plenus est SCHAMAIM, Caelo, Spiritu Aethereo, omnia enim corpora penetravit sublunaris ... HOC ... a vinculis coagulationum fixatio numque Physico-Chemice relaxat atque resoluit in SPIRITUM ad spectabilem sensibusque obvium omnibus: separando, ab superfluitatibus ei admixtis, depurat, et primordiali sic restituit libertati. HOC, CAELUM INFERIUS; PRIMUM; cuius scintilla Alcoool vini, quod Spiritus, Aqua et Ignis".

¹⁹ Khunrath (1609), p. 131: "NOTA: Quomodo ASTRA sint in signa ... hoc est, signa indicantia, et Alphabetum quasi in tomo Libri Mundi maioris Coelesti, quibus DEUS ... de variis ac magnis nobiscum loquitur ... HOC, CAELUM SECUNDUM; sublime; Regio pure aetherea. HOC, Solem, Lunam et Stellas habet; revera etiam PRIMUM et Inferius (suo modo) astra sunt ... Motu harmonico sive sympathico (erga se invicem) movetur utrunque; id quod inferius, sicut quod est superius, et contra. Qui motus, certitudinem suadet (quam dixi) indicationum".

²⁰ Khunrath (1609), p. 151: "ex Astris, tanquam Alphabeto Coelesti, a Magistro exercitato Astronom. et Astr. legi ac scire potest". Khunrath discusses the solstices and refers to the ephemerides. He comments: "Temperamentorum humanorum corporum quae ad dispositionem et constitutionem Coeli et constellationum variantur, moventur, inclinatur. Imo actiones hominum aut redduntur eisdem difficiliore aut faciliores".

²¹ Khunrath (1609), p. 141: "Natura notis et signis, pictae et exornatae sunt, divinisque Naturae caracterismis insignitae; certa nimirum proportione, figuram et habitum; unde de interno et latente spiritu occultisque rerum proprietatibus iudicium fieri potest: imo ipsa proprietates rerum occulta et spiritus latens seipsum prodit certis quibusdam notis et figuris externis, et pro natura ac indole sua, talem effingit signaturam, figuram, proportionem et habitum, qualis a Sapientibus vult cognosci: quae Signatura Magia Naturalis initium, et quasi alphabetum primumque elementum est ... Concurrit enim totius Naturae signatura in Micro-Cosmo".

Quid est Ruah Elohim qui incubat aquis ?
(Khunrath, 1609: 195)

In response, he describes the "Ruah Elohim" as creating the "Theatro Mundano" on the model of the "Archetypus" (the Creator-God).²² This passage is related, in fact, to the 1595 illustration of the "Archetypus" (Christ) in which there occur several examples of Reuchlin's cabbalistic form of the name of Jesus (fig. 33). In the answer to Question VI, Khunrath relates the "caelum" or "aether" to Christ, as the union of spirit and matter, the model for the physical world and the philosopher's stone for its salvation. Khunrath ardently restates his Christian loyalties.

IHSVH CHRISTI crucifixi, Salvatoris totius generis humani, id est, Mundi minoris, in NATURAE LIBRO, et seu SPECULO, typus est, LAPIS PHILOSOPHORUM Servator Mundi maioris ... Et ego Christianus sum, ... et permanens volo (Khunrath, 1609: 197)

The response to Question VIII describes how the aetherial spirit (Christ) gives form to matter by penetrating and fecundating it with the light of the "anima mundi", the inner and outer generative fire of the "azoth" (Khunrath, 1609: 202).²³ Khunrath comments on the role of mercury, as the "azoth" in alchemy by means of which the alchemist works with nature, rather than with his hands.

sine manuali cooperatione, solius Naturae laboribus
(Khunrath, 1609: 201)

In the last stages of the alchemical process, he explains, when the purified body and spirit of the materials are being re-united, the alchemist should use the "Olympian fire" (Khunrath, 1608: 73-74). He refers less directly to the practice of catoptrics in the *Amphiteatrum*, informing the reader only that he has to work in an occult manner with fire, or by means of divine power in a cabbalistic manner.²⁴ This work takes three days to complete

²² Khunrath (1609), pp. 195-96: "Ruah Elohim est SPIRITUS, Spiraculum, ahelitus [Tetragrammaton] sancti, sanctus; Vapor virtutis DEI ... foecunditatis vitalis, primi summiue motoris, vivifica atque virtuosa, ... IDEARUM ... Exemplarium, Specierum, Rationum feminariarum ... in ARCHETYPYPI, opificis summi, mente ... Hhochmah in SAPIENTIA ... ESSENTIA ... vere QUINTA ... DEI NUMEN, et Divina Ratio ... UNUS (essentia et numero) hic DEI Spiritus est; ... Anima catholica ... unius Animae universalis scintillae".

²³ Khunrath (1609), p. 197: "Ruach Elohim (descendendo demittendoque se per circumferentias partesque; abditissimas omnes, et dispergendo in inum vel meditullium, Scintillas radiosve foecunditas suae) ad Centrum usque penetrabat".

²⁴ Khunrath (1609), p. 202: "Azoth hoc est [sign for mercury] mercurium Philosophorum Catholicon: qui cum Igne interno et Externo, harmonia tamen

and it involves all the levels of creation, divine, macrocosmic and microcosmic (Khunrath, 1609: 203).

This catoptrical reference is related to John Dee's ideas, since in an earlier section of the *Amphiteatrum*, Khunrath had referred to Dee's cabbalism in the *Propaedeumata Aphoristica* and the *Monas Hieroglyphica*.

Huc pertinet Cabalistarum Gimetria; Teusrasche; et Neoteriken. Sive (ut Joannes ab Dee Londinensis exprimit, in suis ad Parisienses Aphorismis, et in Praefatione ad Regem Maximilianum Monadi Hieroglyphicae praefixam) Geometria, Notariacon et Tzyrurph (Khunrath, 1609: 6)

Furthermore, there are allusions to catoptrics in certain details of the illustrations in the *Amphiteatrum*, such as the hand-lens in Khunrath's portrait of 1602, which depicts him holding pair of dividers with which he is inscribing a circle (a Pythagorean reference) (fig. 26). Similarly, in de Vries' engraving of the Oratory-Laboratory, a hand-mirror is depicted among the objects on the table (frontispiece). The owl in Khunrath's emblem of 1599 is also provided with optical and luminary accessories such as spectacles, tapers and candle-sticks (fig. 28). It is probable, in fact, that Khunrath was writing his treatise on alchemical catoptrics *De Igne Magorum*, in the same years, 1602-4, as he was reworking the *Amphiteatrum*.

In the same volume as Khunrath's *De Igne Magorum* (Strassburg: Zetzner, 1608) is located Johannes Arndt's commentary on the four figures of what he calls the "grossen *Amphiteatrum*", which, according to Eco, refers to the circular illustrations of the 1595 version (frontispiece, and figs. 32, 33, 34).²⁵ Arndt considers Khunrath's cabbalistic theology of light to be the outstanding aspect of his philosophy and he explains its origins in the Paracelsian theory of the "light of nature" (Arndt, 1608: 109-10).²⁶ The Magus is enabled to perform miracles by means of the Wisdom of God transmitted to nature in the form of light and when the magus sees all things in this celestial light, then he is a cabbalist. Cabbalism, thus, is of higher spiritual worth than magic (Arndt, 1608: 111) and, even more specifically, the cabbalah is magic in a heavenly light. Under the influence of the natural irradiation (of the sun's light), magic is natural wis-

sympathica, cum Igne Olympico, ob necessitatem inevitabilem, Physicomagice unito, ad Lapidem nostrum consequendum ... Quod, Vulcani, secretum, profundissime, abscondum, nisi probe sciveris ... aut ab artifice, aut usu crebro, aut DEIPSO, more Cabalistico, frustra ... laborabis".

²⁵ Johannes Arndt, "Judicium uber die vier Figuren des Grossen Amphiteatrum Henrici Khunraths" in Heinrich Khunrath, *De Igne Magorum Philosophorumque secreto* (Strassburg: Lazarus Zetzner, 1608), pp. 107-23.

²⁶ Pagel, "Paracelsus als "Naturmystiker" (1979), pp. 59-60.

dom, but under the influence of divine iridescence, it becomes Divine Wisdom (Arndt, 1608: 113).

The focus of Arndt's attention is the "first figure" of the *Amphiteatrum*, which, from his description, is the circular engraving depicting the "Anthropos", identifiable with Christ, standing within a cabbalistic cosmos (fig. 32). Arndt refers to the "Hebrew names which stand in the circle", meaning the seventy-two names of God inscribed on the outer sphere (Arndt, 1608: 117-18). He explains that the Hebrew names are those of an "angel" within the circle, which may indicate that Arndt was referring to Reuchlin's description of the cabbalistic angel Metatron who, as the empyreal form of the Messiah, was identified with Christ (Arndt, 1608: 113).²⁷ The Ten Commandments are also inscribed on the circle, while at the four axis points appear the names of the four elements. The theme of this picture is the descent of Anthropos (Christ) into the inferior world in the form of light, as the "Ruah-Elohim", the Creator-God. Klossowski de Rola interprets the outer circle of the Ten Commandments as representing the cabbalistic physical world of Asiyyah, the letters of the Hebrew alphabet as that of Yetsirah, the sephiroth that of the formative world of Beriah and the names of God as the divine world of Azilut. The figure of Christ is the "En Soph" itself and both he and the phoenix at his feet represent resurrection and immortality. Hence, the image is a discourse on Christ crucified and resurrected as the philosopher's stone, probably in a Weigelian sense as the eternal drama of the spiritual Christ within the human soul.²⁸

Another aspect of these four images which Arndt regarded to be highly significant was their depiction of the astral or aethereal fire produced by magic which he regarded as the great secret of nature (Arndt, 1608: 121-23). Arndt mentions Khunrath's citations of the heavenly fire of Prometheus, which was also the secret fire of the oriental magi, such as Aaron, the Chaldeans and the Persians. Although his description is brief, it is likely that it refers to the image of the "Archetypus" whose grace descends to the earth in the form of drops of aetherial water, uniting with the aspiring flames of the virtuous human soul (fig. 33). However, Arndt's account of the secret fire of the sages is equally appropriate to his "first figure" (fig. 32) in which Christ appears in the midst of a blaze of roaring flames, radiating from the dove of the Holy Spirit at his feet. (Klossowski

²⁷ Reuchlin, *De Arte Cabbalistica* (Stuttgart, 1964 facsimile of 1517 ed.), pp. 133, 143, 152.

²⁸ Klossowski de Rola, *The Golden Game* (1988), pp. 43-44. See Peuckert and Zeller, *Valentin Weigel. Samtliche Schriften*, 4, pp. 7ff, 133-51, 320-22, esp. Ch. 3 on "Christus crucifixus".

de Rola had identified this bird as a phoenix). In this image it would be Christ who was the "secret fire of the sages". Both of these engravings visualise the intense experience of Christ's gift of divine grace to the human soul which produces the spiritual state of the "unio mystica". The illumination of the soul, thus, is achieved through the practice of cabbalistic contemplation which reveals the vision of God.

Klossowski de Rola considered that the engraving of the "Archetypus" (fig. 33) described "the entire process of the elaboration of the Philosopher's Stone". He interprets the figure of the "Rebis" in the centre of the image as exemplifying a "most excellent and perfect Marriage, whose mysterious offspring is likened to the Divine Logos, redeemer of all humanity". Klossowski de Rola emphasises the Christological discourse of the image, referring especially to Khunrath's concepts of the death and resurrection of Christ as the "Divine Stone".²⁹

In the illustration of the "Archetypus" the Tetragrammaton creates the world on the model of its own divine qualities which are inscribed on the flames of light shining forth from it. The model for Khunrath's engraving was the computational circles of the Lullian Art which functioned according to categories determined by the eternal qualities of God. The two inner circles of Khunrath's cosmogram are divided into ten categories which, in Lullian mode, record the spiritual virtues of the soul and the taxonomical functions of the human mind. In the outer circle there is a statement that the forms of nature (signified by the quaternary), the duality (of spirit and body) and the ternary (of spirit, soul and body) should be reduced to the simplicity of the Monad (God). Lull had adapted to his logical system the neoplatonic-Augustinian concept of "exemplarism" in which God's qualities were the model for his material creation. Lull's system in the *Ars Inventiva Veritatis* (1289-90) was based on the circular diagram of the "Figura Animae" which employed nine of the neoplatonic dignities of God. It was structured on a trinitarian numerology, since it was computed by three triangles located in the centre, representing the Holy Trinity. Similarly, in the centre of Khunrath's image there is a triangle containing the figure of the "Rebis", signifying the dualistic constitution of the human-being as body and soul. It also represents Christ whose nature was also binary since he was both God and human.

On the pages of a book, shown at the top-left of the central scene, there appears the cabbalistic name of Christ, "YHSVH", recurring also on a scroll winding around the "Rebis", on whose garment are written

²⁹ Klossowski de Rola, *The Golden Game* (1988), p. 44.

the words "Christo inductus et eum imitans" ("led by Christ and imitating him"). On the outer circle of the diagram there is another reference to the resurrected, triunary "Χριστος crucifixus" who sits on the throne (of God) and who leads the soul to the Truth.³⁰ It will be recalled that in the manuscript copy of the 1595 *Amphiteatrum* (MS Alnwick 571) Khunrath had chastised the black magicians for their use of the pentacle, stating that the "annulus" (Agrippa's term for a magical talisman) is the legitimate cabbalistic cypher. It is probable that by these words Khunrath was indicating the theurgic authority of the circular engraving of the "Archetypus" which was derived from the risen Christ.³¹

The same Christian intention of belittling the practices of black magic is encountered in one of the engravings made for the *Amphiteatrum* in 1602, that of a circular fortress with twenty-one gates (fig. 29). The concept promoted in this image is that Christ, as the illuminating principle of nature in the philosopher's stone, is the only path to the kingdom of God. The texts in the centre of the castle refer to the light of nature and the healing powers of Christ as the universal Salt, the philosopher's stone and the water of life. He is to be attained by spagyric and orthodox philosophical principles. Sophistry will not prevail against them.³² In contrast, the texts around the fortress denounce black magical practices, false alchemical principles and sophistry, that is, theurgy without a Christian foundation (basically witchcraft with spirit familiars), materialism and doctrinal rigidity. The other texts in the circle include references to specific alchemical processes, while the section below the castle describes the "Magnesia" (Christ) as the "medicina catholica". It states that the stone

³⁰ Khunrath, engraving (1595): "Sic [Tetragrammaton] pater ["YHVSH" in Hebrew] Χριστος crucifixus, frater: SPIRITUS SANCTUS omnis sedebit in throno suo, TEMETIPSO, triuno, renato, catholico". The scroll around the "rebus" reads: "HOMO ORA/ binarium/ LABORA ["YHSVH" in Hebrew] SAPIENTIA [Tetragrammaton] incarnata, miserere, nostri et doce nos VERITATEM: amen".

³¹ MS Alnwick 571, Par. 74: "Hic ANNULUM assistentia spiritu boni, Theosophorum: (In Tabulis Cordis) Hoc Pentaculum Solo novis virtuosum, non illud Nigromanticorum seu Cacomagorum phantasticum, atque blasphemum: est collo mentis luce suspendenda. Vi de figura Amp. huius 4a". For Agrippa's "annulus" (sigils) see his *Opera* (1600) (Hildesheim; 1970), Bk. III, Chs. 30 and 31, pp. 390-96.

³² Khunrath, engraving (1602): "PETRA PHILOSOPHALIS, qui Mundi maioris filius, et magnus Naturae Παν praeconsortibus suis SALE sapientiae fusili et Oleo, salutis Medicinalis incombustibili, hoc est MEDICINAE Hominum vegetabilium, Animalium, Mineralium, Metallorum, ac Lapidum; imo Rerum Materialium, omnium Universali, unctus; seminarium habens Ignis Naturae; venat habens Aquae vivae et vitae salientis in vitam beatam CHRISTIQUE IHSVH effigies, in Natura symbolica supra quam Unam et Solam Numen Luminis Naturae aedificavit Turbam suam spagyricae ac Orthodoxe Philosophantium, Catholicam. Nec est in Ente alio Naturali ullo salus haec: Et portae sophistarum non praevalerunt adversus eam".

("Elohim sal sapientiae") is prepared "vulcanically" ("vulcanicam") and "neptunically" ("neptunicam"), that is, through the action of fire and water.

Hence, there is only one spiritual path, the way of Christ, by which the fortress of Wisdom may be entered and this is indicated by the elaborate gateway. Klossowski de Rola's interpretation of this image stresses the protective nature of the fortress in which the secrets of the alchemical art are hidden. Twenty of the gates lead the false alchemists to ruin, the only way into the castle is by the practice of moral virtue and through the illuminated knowledge granted by God.³³

Above the main gateway to the castle, there is an image of Dee's Monas Hieroglyphica, while a motto reads "Laborando Orando" which was also Dee's axiom (fig. 30). Around the Monas are two dragons, holding each other's tails in the form of the Ouroboros. Various other symbols refer to the secrecy of the alchemical process, such as a cryptic word, "MYSTERION" which is inscribed, letter by letter, on each of the seven steps proceeding upwards to the classical gate-way. Two obelisks are located at the foot of the stairs, the sun crowning the one on the left and the moon that on the right, which is also labelled "TACITURNITAS". Between the two obelisks is written the phrase "OPERA BONA". At the foot of the path, the figure of an alchemist gazes out at the viewer, while two other figures, exotically dressed in the manner of oriental cabbalists, appear in the space behind the gate, incanting Hebrew texts. The symbolic triangle of God hovers at the top of the scene, while a dragon lurks below, representing base-matter. The texts around him refer to the alchemical processes of putrefaction, coagulation, fixation and increation, while other inscriptions speak of multiplication, reiteration, fermentation, the elixir and the red and white tinctures. Below this scene, there is an emblem of a heart, out of which are growing barren thorns and a flowering bramble. An alchemical kiln to the right of this device is inscribed with cyphers referring to Christ, "INRI" and "IHS".

The path to the main gate of the fortress is drawn in the form of an abstract geometrical structure, so as to present a diagrammatic model of the single-point perspective system. It should be noted that the three-dimensional space of the gateway is discordant with the perspectival structure of the rest of the scene, since the castle itself, as well as its landscape setting, are pictured as a map, or an aerial view. Moreover, the path is drawn in the form of a diagrammatic "pavimentum diminutionis", in the manner of model-books explaining the construction of

³³ Klossowski de Rola, *The Golden Game* (1988), p. 42.

illusionistic three-dimensional space (figs. 1, 21, 22). The implication of Khunrath's perspectival construction is that it is being used as a symbolic image in its own right.

The appearance, hence, of Dee's Monas in this perspectival view of the castle-gate is an allusion both to his Euclidean cabbalism and, also, perhaps, indirectly to his "zographe" in the *Mathematicall Preface* (1570: ff. diijv, diijr), since the classical forms of the castle-gateway and its spatial construction could have been influenced by Dee's Vitruvian theory in the *Mathematicall Preface*. It will be recalled that Dee considered "zographe" to be a conceptual art-form, whose geometrical principles were related to optics. Furthermore, single-point perspective drawing, like any geometrical structure based on Pythagorean mathematical ratios, was a type of magical sigil (Dee, *Math. Pref.* f. ciiijr), similar to the astral catoptrics of the *Propaedeumata Aphoristica* and to the theurgic cypher of the Monas Hieroglyphica. Dee's account of "zographe" in the *Mathematicall Preface* implied that a graphic system based on Pythagorean geometry would act as a theurgic talisman absorbing the celestial virtues. Dee's theories would resonate with Khunrath's own Agrippan influences, as well as with his Paracelsian theosophy in which Christ-Anthropos operated through the light of "Hochmah" to pervade the universe. Khunrath's engravings were, thus, spiritual catoptrical mirrors, reflecting the light of Eternal Wisdom to the mind of the viewer.

According to Szonyi, architectural motifs in mystical imagery are cosmograms in which the buildings and their ground-plans signify the construction of the cosmos, producing a revelation in the viewer's mind concerning the fabric of reality. Szonyi has, however, distinguished such cosmograms from the use of similar architectural motifs in alchemical imagery, since he regards them as being more scenic elements, included within a didactic, slowly-unfolding, alchemical story. For his taxonomy of revelatory and didactic images Szonyi has drawn on Gombrich's definition of symbolic types of imagery.³⁴ According to this argument, Khunrath's 1595 illustrations would be revelatory since they are visually structured to illuminate the viewer's understanding through an empathetic engagement. In contrast, Khunrath's 1602 engravings are more narrative, both in their formal construction and in their semiotic mode, though elements within these images continue to operate with a revelatory intention. On the other hand, many other seventeenth century alchemical images, such as those of Maier in the *Atalanta Fugiens*, are primarily didactic in their intention.

³⁴ Szonyi, "Architectural Symbolism and Fantasy Landscapes", *Glasgow Emblem Studies*, 3 (1998): 49-69.

Another of the 1602 illustrations in the *Amphiteatrum*, as discussed earlier, is both a revelatory and a didactic exposition of Reuchlin's sephirothic ladder. Recalling Reuchlin's frequent references to the cabbalistic "portae lucis", Khunrath's cave is similarly entitled "PORTA AMPHITEATRI SAPIENTIAE AETERNAE" (fig. 31).³⁴ The wording on the rays of light emanating from the cave is discussed in the fourth Isagoge later in the treatise (Khunrath, 1609: 208). Initiates into the cabbalistic mysteries proceed up a sequence of seven steps, each of which is related to a cryptic aphorism appearing in the rays of light, alluding to the need for obedience on the spiritual path since the great mystery is not available to the profane.³⁵

The text below the image states that the path to Jehovah is narrow, known only to the Christian cabbalist and also to those philosophers who profess orthodox doctrines. The incarnation of Christ was a gift from God given to his friends that they might rejoice. Thus, they will not die from sophistry but will live in theosophical wisdom. There is a reference to the "enthusiasm" of Khunrath's theological position and to the falsehoods told against him.³⁶ This text suggests that Khunrath's beliefs were similar to those of Weigel and Arndt in subscribing to the possibility of the soul's direct union with God through the Holy Spirit. Like Weigel and Arndt, Khunrath did not discard the historical role of the incarnated Christ, nor of the Lutheran sacraments. For Weigel, the historic Christ was primarily an exemplar of a holy life, rather than an automatic guarantee of salvation to the baptised, irrespective of how they lived. The Eucharist also contained the living Christ, according to Weigel, but his

³⁴ For the cabbalistic interpretation of the story of Abraham in *Genesis*, 22, see Reuchlin, *De Arte Cabbalistica* (Stuttgart, 1964 repr. of 1517 ed.), pp. 132-33.

³⁵ See Klossowski de Rola's translation of the axioms in *The Golden Game* (1988), p. 43. He regards this image as describing a monistic union with God.

³⁶ The full wording reads: "PORTA AMPHITEATRI SAPIENTIAE AETERNAE, solius verae, et angusta quidem, sed tamen satis angusta, JEHOVAE consecrata, ideoque ad eam per SCALAM suam mysticam, prologeticam nimirum illam, sibi praefixam, picturam hic significatam, graduum septem Theosophicorum, vere Philosophicam, filiorum DOCTRINAE dum taxat fidelium, tractu DEI patris tam immediato, mere ενθουσιαστικω (phy calumniatori!) quam varie mediato, sit ascensus; solisque hisce, DIVINITUS afflatis, datur, secundum LEGES oraculores septem, ante portam, coruscantes, copia introgrediendi, oculisque et corporis et mentis CHRISTIANO-KABALICE, DIVINO-MAGICE, nec non PHYSICO-CHYMICE videndi, conteni, plandi et percotandi quatenam sit Sapientia, Bonitas et Potentia Creatoris: ut Sophistice non moriantur sed Theosophice vivant, et PHILOSOPHI orthodoxi SIC etiam θεο-και φυσιο-διδακτικος creati, PHILOSOPHIA sincera vere philosophice enarrent Opera DOMINI DEUMque, qui illos ita beavit amicos suos, digne celebrent. Extructore HENRICO KHUNRATH LIPS. Theosophiae amatore fidei, et MEDICINAE utriusque DOCTORE. ANNO a JHSVH CHRISTO nato M. DC. II".

interpretation of this was not a Lutheran one, since he also believed in the possibility of an eternal eucharistic union with Christ within the human soul. This is likely to be the sense of Khunrath's references to the role of Christ as the philosopher's stone.

In addition, Khunrath's frequent references to the resurrection of Christ after the crucifixion were also more a reflection of Weigel's teachings of Christ as the role-model for a pious life, than of the doctrine taught by the Lutheran Church that the crucifixion, once and for all, atoned for the sins of the baptised. Arndt's spiritual teachings on these issues were also taken directly from Weigel.³⁷ Hence the wording on the garment of the "Rebis" in the engraving of the "Archetypus", "led by Christ and imitating him", while the reference in the same image to the resurrected, "Χριστος crucifixus", who leads the soul to Truth, alludes to the inner spiritual rebirth of the soul, on which is already inscribed the word of Christ. Khunrath, like Weigel and Arndt, was, thus, promoting the spiritual experience of an individual revelatory insight which is the effect of the "unio mystica" with God through the Holy Spirit. This is the topic of the 1595 engraving of the "Archetypus" (fig. 33).

Nevertheless, although Khunrath was continually attacking the doctrinaire Lutheran theologians, he clearly regarded himself as still belonging to the Lutheran community. He was attempting, like Arndt, to clear a middle-ground between a pietism based on cabalistic theosophy and the dictates of the Church. As in the case of many other mediators, the result was that Khunrath, to his great pain and indignation, was attacked by both sides and viewed as objectionable on all counts. The saving element for a public figure such as Arndt may have been political influence and it may have been that this is precisely what Khunrath lacked.

In comparison with the laboured textual rhetoric of the 1602 engravings, a more subtle Christological discourse was developed by primarily visual devices in de Vries' illustration of the Oratory-Laboratory of 1595 (frontispiece). In fact, the four circular engravings of 1595 are far more elegant in both their visual design and the semiotic delivery of their theoretical programme than those of 1602 which, by comparison, seem dark in their atmosphere and diffuse and rambling in their discursive structure. While the 1595 images are focused on the concept of the al-

³⁷ Peuckert and Zeller (eds), *Valentin Weigel. Samtliche Schriften* (1962-78), 2, pp. 29-31; 4, pp. 7, 133-51, 320-22; Koyre, *Mystiques Spirituels Alchimistes* (Paris, 1955), pp. 81-116; Peuckert, *Pansophie*, 2, pp. 290-300; Pfefferl, "Valentin Weigel und Paracelsus" (1988), pp. 78-89; Braw, *Bucher im Staube Die Theologie Johan Arndts* (1986), pp. 104-43; Stoeffler, *Rise of Evangelical Pietism* (1965), pp. 202-10; Frick, *Die Erleuchteten* (1973), pp. 128-32, 179-80, 587.

chemical "azoth" as Christ and its spiritual and alchemical significance, in contrast, the 1602 series of pictures are concerned with the political status of the illuminated magus and his struggle to defend his sacred knowledge from perversion by the ignorant and himself from political attack. Drawing on Gombrich's distinction between revelatory and didactic images, as in Szonyi's useful argument,³⁸ the 1595 engravings could be defined as being revelatory cosmograms, while the 1602 imagery are primarily didactic narratives, although they also have a revelatory aspect in their mystical intensity. Furthermore, the aerial view of the landscape in many of the 1602 scenes, particularly in that of the "Porta Amphiteatri Sapientiae", not only produces a narrative, didactic sequence, it also creates an imaginative space into which the viewer seems to be absorbed.³⁹ Hence, the panoramic aspect of some of the 1602 images in the *Amphiteatrum*, is an indexical device capturing the spectator within their discourse (figs. 29, 31), although the picture of the "calumniatores" is a purely didactic image since this was, indeed, its sole purpose (fig. 35).

The discourse of the enlightened mage, however, commences earlier than the 1602 series, appearing first in the 1595 engraving of the Oratory-Laboratory. Its main thesis, nonetheless, is still that of the divine light of Christ as the cabalistic and alchemical "azoth". The artist, Jan Vredeman de Vries (1527-1604) trained as a painter in Antwerp, but he fled the Netherlands with his son Pauwels at the time of the Duke of Alba's decree against the Protestants, working instead as an architect for Rudolph II in Prague. He eventually returned to Holland and from 1568 he issued a series of architectural model-books, depicting classical buildings set in deep perspective settings. He also published instructions for the construction of single-point perspective.⁴⁰ None of his treatises are concerned with hermeticism, nor have any records survived which would explain the history of the illustration in the *Amphiteatrum* and de Vries' relationship with Khunrath.

The picture of the Oratory-Laboratory belongs to the emblematic tradition of "Melancholia", introspective contemplation on the nature of the world, which originated in Durer's engraving of that name in 1514. The image had become a generic type by the late sixteenth-century,

³⁸ Szonyi, "Architectural Symbolism and Fantasy Landscapes" (1998): 49-69.

³⁹ See the illustrations in Klossowski de Rola, *The Golden Game* (1988), pp. 34-36, 38.

⁴⁰ De Vries' name is inscribed on the frame of the picture and it is recorded that the plate was engraved by Paul van Doort of Antwerp. See Jan Vredeman de Vries, *Variae Architecturae Formae* (Antwerp: Joannes Gallaeus, 1601); Jan Vredeman de Vries, *Perspective* (Leiden: Henricus Hondius, 1604; New York: Columbia U.P.; Dover, 1968).

incorporating motifs drawn from perspectival geometry, architecture, Pythagorean mathematics and alchemy, arts which were said to be astrologically governed by the planet Saturn. This emblematic iconography conventionally included spatial constructions based on Pythagorean geometry and mathematical ratios.⁴¹ Hence, it is the exaggerated perspectival structure of de Vries' image with its sweeping "pavimentum diminutionis" and emphatic architectural design which contextualises it within the iconographic tradition of Melancholia, as do the musical instruments on the table, designating the Pythagorean musical structure of the cosmos. In addition, the books on the altar within the tabernacle-tent depict geometrical forms. De Vries, however, employs the devices of geometri-cised space with a more radical intention than that of Saturnian symbol-ogy. The spatial structure is a means whereby he can establish an index-ical relationship between the viewer's physical world and that of the picture, enabling the viewer to enter the alchemist's laboratory and to participate in his work.

In the illustration, the hall is divided from a bedroom at the far-end by a screen with a open door, above which appears a maxim stating "dormiens vigila" (while sleeping, be vigilant). The hall is lit by windows in the right-hand wall, with flasks and glass-vessels standing on the window-sills, while a fire-place against the wall on the right is loaded with yet more flasks and other alchemical apparatus. Almost every surface in the room is inscribed with a brief axiom or aphorism, referring to the need for circumspect action and the grace of God. For example, the inscription on the fire-place reads "sapienter retentatum succedet aliquando", while on the pedestals of its two supporting pillars are written the words "ratio" and "experientia". On the wall above the fire-place hangs a coat-of-arms above which is the maxim "nec temere nec timide" and, beneath it, "laboratorium". The bottles on the chimney-piece are labelled "a[er] a[qua] s[piritus] t[erra]", "ros celi", "azoth", "sulphur rubeus", "* phit...m", "hyle", "sanguis", "aurum potabile", "aierr [sign of a cross]" and "mercury". The small furnace, athanor and oven at the front right are inscribed "spiritus", "anima", "festina lente" and "maturandum". Even the coal-scuttle carries an aphorism, of which only a few words are legible, thus, "pudeat" and "arbor". The table in the middle of the room is covered with musical instruments, sheet-music and more alchemical apparatus. A small hand-mirror is carefully placed on the

⁴¹ Allen, *Nuptial Arithmetic* (1994), pp. 125-28. The classic account of the history of this theme is that of Raymond Klibansky, Fritz Saxl and Erwin Panofsky, *Saturn and Melancholy; Studies in the History of Natural Philosophy, Religion and Art* (London: Nelson, 1964). See also van Lennep, pp. 301-6.

near right-hand edge of its surface. Underneath the table appears the axiom "Disce bene mori", while on the front-edge of the table-cloth there is a statement concerning the power of sacred music to deter spirits and evil-doers, "musica sancta spirituumque malignorum fuga".

The devotional theme is elaborated on the left of the picture where a kneeling figure (perhaps Khunrath himself) prays before a richly-decorated, Turkish tent, inscribed with the Tetragrammaton. Within this enclosure stands an altar on which have been placed two books, replacing the customary missals and service-books of the Christian Church. A quote from *Psalm* 149 is inscribed on the book on the right, while the other displays geometrical symbols, with an upright pentacle in a circle on the left-page and, opposite it, an image of the squaring of the circle on which appears the word "Time" and the Tetragrammaton. The appearance of the pentacle is somewhat puzzling in view of Khunrath's diatribe in the 1595 *Amphiteatrum* against black magicians who used this sign instead of the truly Christian "annulus" (of the "Archetypus").

This is explained by examining Agrippa's description of theurgical sigils in *De Occulta Philosophia*. Agrippa used the geometrical form of the pentacle in his account of the harmonic relations between the macrocosm and the human body.⁴² This image, nonetheless, was not the only "pentacle" described by Agrippa who also published the work of Peter of Abano on magical sigils and the rituals associated with them. In the fourth book of this treatise, Abano describes the rites associated with the "pentacle". Agrippa illustrates this device which, it turns out, does not have the form of a geometrical pentacle, but of a six-sided star, composed of two inter-locking, equilateral triangles (commonly known as the seal of Solomon). This image is lavishly decorated with crosses at the points and the rituals are inaugurated with a mass being said over the sigil. Abano takes frequent recourse to the name of Christ and other pious Christian allusions, but he also uses signs associated with the magical text of the Arabic *Picatrix* and the rationale for his rituals is not Christian at all, but intended to satisfy materialistic personal aims. Hence, among the first words spoken in the rite of the pentacle are "give me what I want". Moreover, the rite of the mass is misused to sanctify the sigil and to protect from demons, rather than to reconcile God with humankind.⁴³

There is no evidence at all that Khunrath ever used Abano's treatise and it is probable that he was extremely suspicious of those who did. He

⁴² Agrippa, *Opera* (1600) (Hildesheim; 1970), Bk. II, Ch. 27, illustration, p. 239, see also Chs 23-27, pp. 226-35.

⁴³ Agrippa, *Opera* (1600) (Hildesheim; 1970), Bk. III, illustration on p. 567 and associated rites and rituals on pp. 567-68.

approved of Agrippa, whole-heartedly, never associating him with the black magicians, but in his diatribes against those who practice with the sign of the "pentacle", he is likely to be alluding to those who are using Abano's rituals and entering the grounds of superstition and demonology. The critical factor for Khunrath would always have been the presence or absence of Christ in a theurgy whose purpose was to intensify the Christian experience of the Holy Spirit, thus healing both the soul and the body. For his own pentacle, or "annulus", Khunrath was using the form of Agrippa's cosmically-harmonised man, which Khunrath expanded into the image of cosmic "Anthropos", or Christ as the "anima mundi", the soul pervading the universe. The pentacle in this case would refer by its numerology to the alchemical "azoth", which in Khunrath's Weigelian theosophy is also Christ.

The pentacle is placed opposite another geometrical image expressing the same pietistic Christology, that of the squaring of the circle. Since the resolution of this Pythagorean problem could only be a superhuman feat, hence in the context of Khunrath's theosophy it becomes an icon of the incarnation of Christ, in whom were reconciled spirit (the circle) and matter (the square). The nature of Christ was the quintessential union of the macro- and microcosms, of God and the individual soul. The motif of the circle and the square in this picture also explains the symbol of the geometrical dividers in the later portrait of Khunrath (1604), with which he is inscribing a circle and the words "Deo duce" (led by God), another Weigelian reference to Christ as the "typos" for a pious life and to the guiding words of God written on the human soul (fig. 27).⁴⁴ Since this preliminary drawing of the circle may involve the same Euclidean conundrum, thereby Khunrath is pictured contemplating Christ's incarnation within the individual soul, for the geometrical cypher of the square and the circle represents the "unio mystica" of the Weigelians. On the dividers in the portrait is written the word "hieroglyphica", signifying that the squaring of the circle, like the upright pentacle, is also an "annulus" (a hieroglyphic sigil).

In the 1595 engraving of the Oratory, Khunrath's name is inscribed on the tabernacle-tent in the context of those who are enlightened, since the main text appearing within the tent admonishes the viewer not to speak about God without the light of illumination ("ne loquaris de deo absque lumine"), while another axiom declares that no man can be great

⁴⁴ The portrait displays alchemical equipment, including a prominent set of measuring-scales. The text of Khunrath's book reads: "GOTT, Du hast mich von fugend auss gelehret darumb verfundige ich deine munder PSAL 71 v17". Also present are the figures of Minerva and Hermes.

without divine inspiration ("sine afflatu divino nemo unquam vir magnus"). Yet another statement proclaims that God himself will come to "our" aid ("hoc hoc agentibus nobis aderit ipse deus").

The Oratory-Laboratory is, thus, meant to be read as a sacred "temenos" in which God is present in his essence as in the "sanctum" of a Christian church, or in the "Holy of Holies" in the Temple at Jerusalem. The *Zohar* laid great stress on the rituals to be performed in worship before the Tabernacle, engaging music, song and the burning of incense. Similar elements in de Vries' picture recall the *Zohar*'s descriptions, such as the prominently displayed musical-instruments and the incense-burner.⁴⁵ The perspectival construction and architecture of de Vries' picture, even recall certain paintings and carved reliefs on the doors of eucharistic tabernacles in Italian churches which displayed a similar view of an empty hallway with a "pavimentum diminutionis" running into a vanishing-point in an open door. The empty space beyond it represented the sacred presence of God. Tabernacle-doors of this type were first designed by Desiderio da Settignano for the main altar of the church of S. Lorenzo in Florence (installed in circa 1461). By the early sixteenth century this design had spread beyond Italy, for example, to Hungary where comparable scenes were made for tabernacles by George Szathmary in Pecs and by Andrew Nagyrevy in Pest. In sixteenth century Netherlandish painting there appeared the related motif of an altar-space with a classical colonnade, constructed in single-point perspective, located at the centre of the picture. Examples of this pictorial device include those of Hans Holbein the Elder's *Fountain of Life* (1519) and Bernart von Orley's *Job Altar* (1521).⁴⁶

De Vries' picture belongs to this iconographic tradition in which classical architecture and perspectival geometry signify an elevated spiritual domain. Hence, de Vries' spatial geometry indicates the sacramental presence of Christ in Khunrath's alchemical theosophy. This image may be compared with Michael Maier's depiction of the Eucharist in his *Symbola Aureae* in which a priest, also with his arms raised, stands in prayer before an altar. Behind him, there appears a vision of the Apocalyptic

⁴⁵ Lachower and Tisby, *Zohar* (1989), 3, pp. 933-37, 1020-22.

⁴⁶ For Desiderio da Settignano see Charles Seymour Jr, *Sculpture in Italy (1400-1500)* (Harmondsworth: Penguin, 1966), pp. 141, 148, illustration on p. 90. The Hungarian examples are illustrated in Jan Bialostocki, *The Art of the Renaissance in Eastern Europe* (New York: Cornell UP, 1976), fig. 13 tabernacle by George Szathmary, Pecs cathedral, early 16th-C and fig. 14 tabernacle by Andrew Nagyrevy, Pest, Parish Church of the Inner City, c. 1504-5. The Netherlandish paintings may be found in Gert von der Osten and Horst Vey, *Painting and Sculpture in Germany and the Netherlands (1500-1600)* (Harmondsworth: Penguin, 1969), fig. 95 Holbein and fig. 180 Orley.

Virgin, a woman crowned with the sun and seated on the horns of the moon, suckling a child in her arms. This is one of Maier's few direct references to Christ.⁴⁷

De Vries' engraving could even be a direct reference to Luther's original doctrine of the Eucharistic presence of Christ in which Christ is truly and consubstantially present in the bread and wine.

Darum wird im Sacrament unter dem Brod und Wein sein Leib und Blut wahrhaftig und wesentlich dargereicht und empfangen.⁴⁸

Weeks has argued that Luther's use of the word "Wesen" was reinterpreted by Boehme to describe the indwelling presence of God in the world and it may be that Khunrath, and Maier, were also re-using Luther's doctrine to describe the indwelling presence of Christ in the human soul. Luther had also discussed the symbology of the Ark of the Covenant, naming its three compartments the "atrium", signifying the body, the "sanctum" (the soul) and the "sanctum sanctorum" (the indwelling hidden presence of God within the soul).⁴⁹ This symbology accords well with the spatial structure of de Vries' engraving in which the hall-way would refer to Luther's "atrium", the tent to his "sanctum" and the altar with its Christological cyphers would be the Weigelian and cabbalistic version of Luther's "sanctum sanctorum".

These interpretations of Khunrath's symbological programme by no means exhaust the layers of visual discourse embodied by this engraving, since there exists a yet more subtle Christological reference in de Vries' picture, similarly related to the doctrine of the incarnation of Christ. For, the "pavimentum diminutionis" was used as a symbolic motif in early Renaissance paintings to express this very same point of Christian dogma. For example, in the well-known Fitzwilliam *Annunciation* by Domenico Veneziano the subject-matter of the painting is denoted by the perspective of the architecture itself (fig. 36). The vanishing-point runs into the "hortus conclusus", the enclosed garden which was an emblem of Mary's continued virginity subsequent to her conception of Christ, thereby, attributing him with a superhuman paternity. In Veneziano's painting, the garden is seen through a doorway at the back of a pillared portico and the main centric axis of the perspective system enters it at the

⁴⁷ Michael Maier, *Symbola Aureae Mensae Duodecim Nationum* (reprint Graz: Akademische Druck, 1972), Bk 11, p. 509.

⁴⁸ Andrew Weeks, *Boehme* (New York: State University of New York Press, 1991), quote from p. 100. See also Frick, *Die Erleuchteten* (1973), pp. 124-32.

⁴⁹ Weeks, *Boehme* (1991), pp. 100-1.

middle-point.⁵⁰ De Vries had travelled in Italy and he would have seen exemplars of this common Annunciation iconography. The indirect reference to this theme in his engraving is intended to reinforce Khunrath's concept of Christ as the alchemical "azoth" and the philosopher's stone, uniting the opposites of spirit and matter. This symbology also affirms the real presence of Christ in both the Lutheran Eucharist and, eternally, in the soul of his pious follower.

Moreover, the perspectival system of de Vries' engraving is conceptually related to the theurgy of John Dee in the *Propaedeumata Aphoristica* and in the *Monas Hieroglyphica* in which optical devices were used to trap the generative rays of the stars. It will be recalled that Dee had interpreted the geometry of the single-point perspective-system as being a similar theurgic device, since it was based on Euclidean optical models and on Pythagorean mystic geometry. Relating the proportional ratios underlying geometrical drawing to the mystical numerology of Pythagoras, Dee had implied that this type of drawing ("zographe") produced a theurgic mirror which catoptrically reflected the divine qualities of the heavens to the viewer. In addition, Dee had stressed the intellectual and spiritual values of Vitruvian architecture, such as the classical elements and spatial proportions which are shown in de Vries' picture. The whole hall-way, in fact, symbolises a cone of light-rays whose apex lies in the eye of God. The picture is, thus, a reflection of God's divine vision, becoming a theurgic mirror of enormous power which, rightly used, could effect spiritual and material transmutations.

This optical aspect of the illustration may be signified by its circular frame, whose significance was originally more pronounced in the Hamburg 1595 version, as is evidenced by the Basel copy of the treatise in which de Vries' illustration is surrounded by the text of the 1602 Isagoge radiating outwards like the spokes of a wheel. This design has the appearance of an eye, the text forming the iris, with the picture itself as the pupil. Such an interpretation would not be fanciful, since there existed proto-types for this "eye of God" format in Netherlandish painting of the early sixteenth century, such as Hieronymus Bosch's circular image of the *Seven Deadly Sins*, in which a text warns the viewer "Beware, beware, God sees".⁵¹ These refined allusions to optical theory are almost lost in

⁵⁰ Ackermann pp. 124-27.

⁵¹ The 1595 format in the Basel University Library copy is reproduced by Gilly in *Das Erbe der Christian Rosenkreutz* (1988), opp. p. 18. For Bosch's painting of the Seven Deadly Sins see Walter S. Gibson, *Hieronymus Bosch* (London: Thames and Hudson, 1973), pp. 33-47, fig. 27.

Jung's 1602 copy of the engraving in the Copenhagen manuscript, in which he has retained only the distant perspective view. Although this argues for the conceptual importance of the spatial construction of de Vries' picture, however, Jung has transformed the original image into a conventional seventeenth century Dutch interior, with a box-like foreground space in which the alchemist prays and a door-way in the right background displaying a view of succeeding rooms, domestically arranged. Jung's copy, nevertheless, serves to emphasise the extremely unusual nature of de Vries' original perspectival construction, underlining more clearly the fact that de Vries intended his spatial geometry to act as a visual discourse in its own right. In his version of the design, Jung also brought forward the fireplace and located it on the left-hand side of the scene, placing the alchemist on the right, while the table is pushed against the back-wall of the dark and narrow room. The circular text is replaced by two large boards hanging on the back-wall which explain the image in similar terms.⁵²

In some respects, Jung has produced a mirror-image of the 1595 Oratory-Laboratory and, supported by some refined aspects of the original design, this is suggestive evidence that the engraving was, in fact, meant to be viewed by means of mirrors and lenses, as may also be inferred by the hand-glass lying on the table, as well as by the magnifying glass in Khunrath's portrait. First, it should be noted that the geometrical construction of the space has been exaggerated by de Vries, especially in the drawing of the "pavimentum diminutionis" which is quite sharply "raked". Next, the vertical lines of the walls slope inwards to meet in a second perspective-point above the roof of the hall, since the sides of the upper windows incline slightly towards each other. Hence, the geometrical construction of the space in the hall is similar to that of a fish-eye lens, an almost spherical three-dimensional space which is commensurate with the circular frame of the picture. The pronounced chiaroscuro of the drawing, in particular, the deep shadows near the table and the fire-place also promote the spatial illusionism. Consequently, these various graphic devices seem to indicate that the image should be viewed with the aid of an optical lens, such as a magnifying glass, or by means of a double reflection in two mirrors, or by a combination of mirrors and lenses. When it is viewed through a convex lens, the graphic exaggerations drop back and cease to intrude on the visual logic of the scene, for the depth of the hall diminishes and the floor appears less raked. In particular, the

⁵² Jung's drawing in Bibliotek Kopenhagen, MS GKS 1765 may be seen in the reproduction in Gilly, *Cimelia Rhodostaurotica* (1995), p. 14, Item 12b.

space around the table and the fire-place becomes "real" and the furniture stands-up, away from the background.

By the eighteenth-century there existed an apparatus known as the "Vue d'Optique" consisting of an arrangement of mirrors and lenses used to reflect the image of an engraving to a viewer, usually of an architectural scene whose three-dimensional quality was thereby greatly enhanced.⁵³ Engravings intended to be viewed by means of the "Vue d'Optique" depict a long depth-of-field, as well as strong contrasts of light and shadow in the foreground. Thus, by means of catoptrics de Vries could have been attempting to produce an unbroken spatial (indexical) continuum between the physical world and the illustration. For that very purpose Alberti in his *De Pictura* (1435) had originally introduced the device of single-point space into painting, in order to blur the division between imagination and reality. Alberti's spatial geometry was primarily a rhetorical device designed to slip a message effortlessly past the viewer's objective judgement. According to Obrist, the medieval alchemists had provided visual depictions of their ideas with the same intention of confusing the viewer's sense of reality.⁵⁴ Paracelsus had also considered the human imagination to be an astral force, capable of theurgically manipulating the world of time and space. Hence, the prime function of de Vries' engraving was to validate Khunrath's cabbalistic Christological alchemy.

There are two other pictures in Khunrath's iconographic repertoire which similarly provide a rhetorical defence of his position as a spiritual alchemist against the rising tide of objections to his theosophical Christology. These are the Magdeburg emblem of an owl and the 1602 image of the "calumniatores".

⁵³ Henry Moore Institute, Leeds, *Peter Scheemakers: "The Famous Statuary" (1691-1781)*, 1966, exhibition catalogue, No. 6, Vue d'Optique engraving, c. 1750, with mahogany and glass viewing machine.

⁵⁴ Obrist, pp. 55-65, 248-49.

CHAPTER TEN
EPICUREANS, BLASPHEMERS, SOPHISTS AND
BLACK-MAGICIANS: THE PERSECUTION OF
HEINRICH KHUNRATH

The engraving of the “calumniatores”, belonging to the 1602 series, depicts Khunrath’s hostile detractors, the “black-magicians” and “sophists” whose animosity induced him to extend his illustrative programme in order to justify himself publically through a campaign of visual polemics (fig. 35).¹ Slightly earlier, he had expressed a more subtle criticism of these antagonistic forces by emblematic means, devising an image of an owl, accompanied by a mournful poem to express his regret at the human inability to accept truth, even when guided by the light of superior wisdom. This owl, an impressive, bespectacled personage, first appeared in the *Magnesia Catholica* (Magdeburg, 1599), but it is also occasionally encountered in the 1609 *Amphiteatrum* (fig. 28). The first lines of his castigatory poem read:

Was helfen FACKELN, LICHT und BRILLEN,
Weil jedermann nicht sehen Willen
In der CHYMIA angstlicht sucht,
Das ihm das HERTZ im Leibe pucht!²

In comparison to the mournful tone of this poetic rebuke, the 1602 engraving of the calumniators is bitter and extremely defensive, demonstrat-

¹ Eco, p. 14.

² The full poem is found, with the owl, opposite the title-page of the G. H. Dehrling edition of Khunrath’s *Chaos* (Frankfurt, 1708). It reads:

Was helfen FACKELN, LICHT und BRILLEN,
Weil jedermann nicht sehen Willen
In der CHYMIA angstlicht sucht,
Dasz (sic) ihm das HERTZ im Leibe pucht !
Er suchet zuuar die creutz und qver,
Alleine NICHTS das findet er,
Und setzte er auf alle Brillen,
Weil er nur thut nach seinem Willen,
So wird er doch nicht treffen an
Die WAHRHEIT, so er freuen kan,
Versuchs, und lis das mit VERSTAND,
Und tapp nicht blindlings, nach der WAND,
Gebrauch recht FACKELN, LICHT unde BRILLEN,
So wird GOTT deinen Wunsch erfüllen.
VOLENTI NON FIT INIURIA.

ing the fact that Khunrath's enemies subsequently became much more vindictive towards him, their attacks leading, perhaps, to the suppression of the proposed 1602 and 1604 editions of the *Amphiteatrum*. It may even be the case, as his editors, Wolfart and Figulus, imply, that Khunrath's premature death in 1605 was connected with political harassment.

The 1602 engraving is dense with symbolic references, providing a more specific identification of his enemies, though without naming names, thus, requiring more extensive analysis than the present context permits. Its central characters are two men, one dressed as an academic and the other as a traveller, speaking to two groups of masqueraders wearing either court or theatrical costume. These constitute a motley rabble, since their heads have been replaced by those of beasts, such as rabbits, pigs and sundry creatures, comparable to the demons painted by Hieronymous Bosch, Jan Breughel and other iconographers of hell.

Above these disreputable revellers, there surfaces a flight of winged devils with inhuman features, the largest air-borne pest on the left representing the "calumniatores", while a huge, wasp-like, half-human on the right signifies the "blasphemers". The wasp-creature states, "Blasphemat sit anathema maranatha" and it is labelled "praefectum diabologorum", probably thereby alluding to the Roman Catholic hierarchy, since this insect's head-gear is that of a cardinal or Jesuit and it carries a sprinkler for holy water, as used in Catholic ritual. Behind him appears a dragon on whose body is written, "lingue venono (sic)" ("in a venomous tongue"), while below the creature one of the carousers bears a fire-extinguisher, which squirts out a text referring to the disgraceful and lying, thievish (swindling) tavern-songs of this "honourable" company.

Although this scenario is related to the Protestant convention of anti-Catholic caricature, this does not necessarily indicate that Khunrath's main enemies were the Roman Catholics, for they were more likely to have been members of the German reformed church, or of no church at all. It is probable, in fact, that, at one level, the anti-Catholic iconography of this particular image is being used as a secondary signifier (in Barthes' terms), in which the political discourse has itself become a unified sign, in this case, referring to the superstitious practices, materialism and atheistic tendencies within the Lutheran community.

This is made clear by other details in the illustration, where in the group on the left there appears a Lutheran cleric, labelled on his garment as being a corrupt priest, as well as "Anti-Christus". Above his head hovers a bat, aiming a pair of bellows at the cleric, as if to transform him into an anti-"philosopher's stone", that is, one who turns the gold of scripture into dross. At his left, there stands a richly-dressed alchemist, with a rabbit's or donkey's head, carrying a pair of bellows, as well as a

mortar and pestle. He signifies the materialism of the misguided "puffers", while a similar breed of creature, looming-up behind the pastor, shoulders an axe. Above this group of Lutherans and false alchemists, the flying "calumniator" is labelled "annihilemus" and "Beelzebub princeps". He is shown declaring to the "chosen faithful" (those who are justified by faith in Lutheran doctrine) "let us lie boldly, always adhering [rigidly] to some issue but abstaining from [seeking] the truth".³

It becomes apparent from the evidence of these motifs that Khunrath was defending himself against Lutheran theologians whose rigid definitions of Christian dogma led them to accuse the reformists of heresy. In Khunrath's opinion, they were on a par with his other enemies, the materialistic alchemists, demonic magicians and epicurean atheists. It is tempting to interpret Khunrath's citations of "black-magicians" and false alchemists as being solely metaphors alluding to Lutheran scholastics, since, at one level, he is certainly making this analogy. Other evidence, though, indicates that these terms were also used to refer expressly to groups and individuals who practised magical rituals of which he disapproved.

More specifically, the group on the left of this engraving, almost certainly, represents those Lutherans who adhered to the religious principles codified in the "Book of Concord" of 1580, devised by Augustus, Elector of Saxony, as a compromise with the Philippist and Calvinist reformers in his state. All Lutheran pastors had been required to sign their assent to this agreement and, in consequence, the period was marked by repression of dissident pietist groups. (Weigel at Chemnitz had also signed the Book of Concord, although secretly expressing his objections to it). On the death of Augustus, the new Elector, Christian I, had temporarily brought the Calvinists to power in a relaxed regime of reformist policies. Christian, however, died in 1591 and his successor reverted to the Book of Concord, dogmatically applying institutionalised Lutheran principles, specifically those connected with the sacraments of baptism, absolution and the Eucharist. The theological position of conservative theologians was that adherence with faith to these doctrinal principles, no matter how poorly understood, was an automatic guarantee of salvation, rather than pious living on the model of Christ.

As a result, through to the early years of the seventeenth century, the Calvinists in Saxony were severely treated and their pastors were expelled, or even sentenced to death. The University of Wittenberg had

³ Khunrath, engraving (1602): "Fideles dilecti, calumniimini audacter, semper aliquid haeret nec parcite veritati".

been a centre of Philippist (pro-Melancthonist activity), as was the gymnasium, which could explain Andreas Riccius' support for Khunrath in 1604, since he is described by Arnold as a "school-rector" of Saxony. The suppression of the dissidents intensified around the year 1600, spreading into Lusatia (Boehme's homeland) and leading to the execution of Nikolaus Krell, the former Calvinist adviser to Christian I.⁴ Khunrath's engraving may even be referring to this event in the detail of the double-axe of the rabbit-like alchemist. At Krell's execution, doctrinaire Lutheran theologians had shouted abuse at him for his reform of the rites of baptism, in which he had omitted the words of exorcism, thus, condemning infants to the care of demons.

For much of this period, Khunrath would have been in Prague and it is noteworthy that he did not return to his birthplace in Leipzig, in the lands of the Saxon dynasty, but went first to Hamburg, then on to Magdeburg, where some of his books were published. His departure from Prague may have been due to the fact that from 1591, the Emperor was colluding with the Saxon authorities in enforcing the Book of Concord. In December of the same year, Khunrath joined the court of Count Rosemberk at Trebona. These events may also be reflected in the 1602 engraving by two particular figures among the group of Catholic wastrels on the right-hand side of the picture, one of these (nearest the centre) could be the major-domo of a court, since he carries a sceptre over his shoulder. The bespectacled figure to his right, lavishly-dressed in furs, has a book and a pen in his hands, perhaps a reference to the Book of Concord. Could this be Rudolph II himself?

On his return to Germany, Khunrath sustained his involvement in the religious politics of Saxony, as is evidenced from his friendships with Riccius and, most especially, with Seussius who, from the evidence of his poem in the *Amphiteatrum*, seems to have represented his case before the Elector in 1604. Khunrath would not have been in direct contact with Weigel, who had died in 1588. Moreover, although Khunrath's theosophy was modelled on Weigel's ideas, it did not appear in a developed form until circa 1595, for his earliest works, the *Athanor* and *Magnesia Catholica* were low-key, conventional Paracelsian treatises. Khunrath, nonetheless, probably already sympathised with the reformist ideals of the Philippists and Calvinists before he fell completely under Weigel's spell. In addition, even though Weigel concealed his manuscripts during his life (appearing in print only from 1616), the radical concepts that he

⁴ For an outline of anti-Calvinist policies in Saxony, Silesia and Lusatia and their effects on pietism see Weeks, *Boehme* (1991), pp. 23-26.

preached to his congregation at Chemnitz were wide-spread public knowledge.

Weigel had stated his case against those who subscribed to the Book of Concord in the *Dialogus de Christianismo* (composed in 1584, but not published till 1616 in Newenstatt by Johann Knuber). In his dialogue with the "Conciator" (conciliator), Weigel continued to defend the validity of the Eucharist as enshrining the physical presence of Christ, but he argued that the real union with Christ took place through an inner revelation of the Word of God which was perpetually inscribed on the human soul. Hence, the crucifixion and resurrection of Christ enacted in the sacrificial rites of the Eucharist signified, not the redemptive authority of the Church as his apostolic successor, but an inward conversion of the sinner, thereby, sacrificing his old self and espousing instead the imminent Christ.⁵

Hence, in Khunrath's engraving, the scholarly figure on the lower-level of the illustration takes recourse to the inner consolation of his Christly "gnosis", informing the monstrous group of Lutherans and demonic black-magicians that, no matter whether they esteem, or disparage, him, he will simply continue to pray.⁶ He carries a pair of geometrical dividers, such as those which appear in the later portrait of Khunrath in 1604, with which he is drawing the diagrammatic icon of Christ. In the 1602 engraving, therefore, the scholar may also be Khunrath, his dividers signifying the sacred geometry of his theosophical system. With these he pins a serpent to the ground, demonstrating that the wisdom inspired by the Holy Spirit conquers sophistry, symbolised by the snake with its "lingua venona", whose spurious reasoning in the Garden of Eden had originally distanced humanity from God's grace.

Meanwhile, the other character on the right, pays no attention at all to his stressful companions, for he is gazing into the cave in the centre of the picture, which is yet another depiction of Abraham's mountain of the covenant, in Khunrath's pietism signifying the permanent bond of God with humanity through Christ in the individual soul. A band of text around the wayfarer states that his help comes from God, who made heaven and earth.⁷ The upper level of the cave contains a three-pointed star, representing the Holy Trinity, as well as the three Paracelsian prin-

⁵ Peuckert and Zeller (eds), *Valentin Weigel. Samtliche Schriften* (1967), 4, pp. 7, 133-51, 320-22; Frick, *Die Erleuchteten* (1973), pp. 128-32.

⁶ Khunrath, engraving (1602): "pro eo, ut me diligenter, detrahebant mihi, ego autem orabo".

⁷ Khunrath, engraving (1602): "auxilium meum a Jehovah, qui fecit celum et terram".

ciples, while in the lower level there appear a lion and a dragon, the latter being the alchemical Ouroboros ("ego draco sapientum"). The text on his heraldic shield explains his significance as a hieroglyph of the spirit of the most wise and secret world by which the cosmos is animated and conserved.⁸ The lion also bears a shield which explains that he is the Salt of Wisdom and the alchemical Magnesia.⁹ A stream of water issues from the cave across a text on the ground which pronounces Khunrath's philosophical convictions to be of the highest natural and moral rectitude, testified by the conscience, born of sane reasoning, according to Christian doctrine.¹⁰ The texts around the cave, as well as those on the left and right-hand sides of the engraving, cite Seneca, Gratus, Hieronymus Oseanus, among others, insisting on the veracity and probity of Khunrath's ideas. (Seneca was one of Weigel's most important sources). Similarly, the poem around the edge of the inner frame comments on Khunrath's labour and the injustice shown him.¹¹

At the top of the engraving appears the Tetragrammaton, below which is inscribed Khunrath's name and a text urging him not to retreat before the evil onslaught, but to advance towards it.¹² The Tetragrammaton radiates its light onto a star in the shape of an upright pentacle, which is Khunrath's "annulus" signifying the "azoth", that is, Christ. It stands in a radiant, double-aureole, within a text explaining that this is the enduring star of truth, illuminating and indicating the way. The viewer is instructed that he should place this image as a seal on his heart.¹³ In the centre of the star, there is a cross with the letter "S" wound around it, representing the Hebrew letter "Shin", the sign for fire, while the Hebrew letter itself appears at its head. The other arms of the star bear the letters of the Tetragrammaton, thereby forming the cabbalistic name of

⁸ Khunrath, engraving (1602): "HIEROGLYPHICON. SPIRITUS mundi sapientissimi et secretissimi quo universa animatio ... ac conservantur".

⁹ Khunrath, engraving (1602): "Ego LEO salis sapientiae fortis naturaliter triunus de tribu primateriali catholica mercuriali Magnesia solus vinco".

¹⁰ Khunrath, engraving (1602): "KOINAI-ENNOIAI hoc est Notitiae communes, ex LEGE in cordibus nostris Divinitus scripta nobiscum nascentes et Conscientialiter ortae: Unde Conscientiae testimonium; Iudicium Naturale sincerum; Ratio sana; in philosophia et omnibus Artibus Χρ[ι]στ[ι]αν[ι]σ[μ]ο[υ] doctrinarium et certitudine normae".

¹¹ Khunrath, engraving (1602), a sample of these texts is, left: "Sacrosanctus BIBLIORUM DEI codex infallibilis: EXPERIENTIA eorum de quibus quod LAPIDEM sophorum EX MAGNESIA HAC nostra [sign for Saturn] habuerint, apud Doctrinae filios gravis eruditus et constans est sermo". Top of cave: "HARMONIA JHSUH CHRISTI cum LAPIDE philosophorum symbola et contra". Right: "HIEROGLYPHICORUM in quibus mysteria sapientum multa delitescent recondita sapiens indagatio et applicatio". Lower right: "LIBER Numinis et Luminis NATURAE Macrocosmicus benedictus".

Jesus. With these cyphers, Khunrath is proclaiming Christ as the ardent centre of his spiritual alchemy.

The lengthy text at the foot of the picture explains that the current version of the *Amphiteatrum* was produced as a defensive measure against Khunrath's enemies who were abusing his ideas in a debauched and bacchantic, unchristian spirit of lies and venom, partly from idiotic ignorance, partly from diabolical envy, partly from lewd accusations, without philosophy, still less Christian feeling, with obscene revels, maliciously prosecuting him with a venomous tongue, cruelly setting upon him and abominably humiliating him.¹⁴ In contrast to these horrible attacks, Khunrath's pictures were not intended to be an aggressive act, but, only a justification of his own probity, "non Offensive sed Defensive", in a "responsionem Catholicam ... et in Scriptura, et in Pictura". There is no doubt that Khunrath's chief enemies were the "sophists", academic theologians, whose lust for power was the source of the grave disruption of the Saxon states in the 1590s and early 1600s, which may even have been threatening Khunrath's own life.

Andreae castigated a similar range of miscreants, both the pagan epicureans and the sophists, in his *Mythologiae Christianae* (1619). Since, therefore, Khunrath in 1602 and Andreae by 1619 appeared to be fighting on the same pietistic front, against the same types of enemies, both aligned with the revered figure of Johannes Arndt, who especially favoured Khunrath's theosophy, then how is it possible to explain Andreae's attack on Khunrath in the *Mythologiae Christianae*?¹⁵ To understand Andreae's apparently contradictory position in relation to Khunrath, it is necessary

¹² Khunrath, engraving (1602): "Henrice Khunrathe tu ne cede malis, sed contra adventior ito; tibi ad tum".

¹³ Khunrath, engraving (1602): "DURANS VERITATIS ASTRUM HOC FULGET ET MONSTRAT ITER PONE ME UT SIGILLUM SUPER COR TUUM. SIC OMNIA".

¹⁴ Khunrath, engraving (1602): "In despectu legitimum Universorum, Omnium, cunctorum et Singulorum, praeteritorum videlicet, praesentium ac futurum, ... cuiuscunque etiam fuit Generis, Dignitatis, status sive conditionis ... partim ex Ignorantia idiotica, partim ex invidia diabolica, partim ex libidine Calumniandi ... vel innata vel malitiose affectata ... LABORIBUSQUE meis THEO et PHILO-sophicus, ad honorem DEI, Proximeque utilitate maximopere directis, super Numinis et Luminis Sacrosanctae BIBLICAE Scripturae et NATURAE, nec non Sapientum traditiones Doctrinas atque Decreta QUINDECIM hic annotata: (Que FUNDAMENTA Dogmatum meorum, Consilio, Ordinatione et Institutione firmata DEI !) orthodoxe fixis et fundatis; haud Philosophice, nedum Christianem, imo turpi debachantium more, Linguae Veneno calumniosae, crudeliter insidiantium, nefarieque detrahentium RESPONSIONEM Catholicam hanc ... et in Scriptura, et in Pictura, non Offensive sed Defensive".

¹⁵ Andreae, *Mythologiae Christianae* (1619), Bk. III, 45, p. 271-72.

to review briefly his role in the history of the Rosicrucians. Andreae's antagonism to Khunrath illustrates the differing affiliations in hermetic circles, displaying a more complicated picture than Yates' image of a unified, anti-Habsburg front.

Yates had also commented on the intense piety expressed in the *Fama Fraternitatis* (Cassel, 1614) and *Confessio* (Cassel, 1615), whose pious axiom was "Jesus mihi omnia", while the *Fama*, in particular, described the followers of Christian Rosenkreutz as being members of the Lutheran community. Likewise, the Manifestos expressed the Brotherhood's foremost regard for the Bible, although it was closely matched by an undisclosed book of secret wisdom, which they claimed to have recovered from the tomb of their founder.¹⁶ Despite these apparent Lutheran loyalties, Montgomery, nevertheless, contended against Yates that the Manifestos were fundamentally anti-Christian, since they had discarded the redemptive role of Christ, favouring both private contemplation on the neoplatonic model, as well as privileged initiation into a path of spiritual knowledge unrelated to Christian doctrine. Yates, in fact, had emphasised the community character of the Rosicrucian Brotherhood, in contrast to the self-inspired magus.¹⁷

Both scholars associated the Manifestos with the circles of Simon Studion, whose *Naometria* had been circulating in manuscript since the late 1580s, or early 1590s. Influenced by the chiliasm of Joachim of Fiore, Studion predicted that the third age of the Holy Spirit would be inaugurated by a major political and social change in the European order, commencing in 1604. He even delayed the completion of his treatise until 1604, intending its public appearance to coincide with the inception of the new era. Montgomery has commented on the fact that, in the Manifestos, the tomb of Christian Rosenkreutz was said to have been opened in 1604.¹⁸ In addition, he has argued that the *Fama* and *Confessio* were already circulating in manuscript in 1593-1604, the same period in which Studion was preparing his *Naometria*.¹⁹ Montgomery, thus, would have it appear that the Manifestos emerged from a non-Christian, chiliastic context, from those circles which were anticipating a second refor-

mation to fulfil Luther's original programme. This would no longer be founded on Christian doctrine, but on cabbalistic theosophy.²⁰

These chiliastic activities, in circa 1593-1604, coincided with the public appearance of Khunrath's alchemical and cabbalistic Christology, but the pietistic atmospheric of Khunrath's treatises could not be more different from the obsessive manipulations of Studion's cabbalistic cryptography. In fact, Studion's graphic structures, as well as those of Tobias Hess, are related to the theurgic emblems of Peter of Abano and other medieval necromancers publicised by Agrippa. These may, in fact, have been the "pentacles" denounced by Khunrath in the 1595 *Amphiteatrum* for their anti-Christian connotations, while pronouncing his own "annulus" of Christ as the "azoth" to be the true cabbalistic insignia. Such differences in the interpretation of cabbalism and Paracelsian theosophy by different German philosophers raise the question, discussed by Stoeffler, concerning the exact role of hermeticism in the history of religious reformism.²¹ Certainly, the ideological position of Studion and his collaborator, Tobias Hess, in their jointly-authored *Prophetica*²² is of a different order from that of Weigel, Arndt or Khunrath. Studion and Hess seem to have favoured the idea of reform almost as an end in itself, fascinated with cabbalistic techniques of prognostication and the image of the all-powerful magus, whereas the three pietists were using cabbalism and Paracelsian alchemy for the sake of a reformed Protestant Christianity. Consequently, although Khunrath's work should be placed within the history of German pietism, in contrast, that of Studion and Hess belongs to the broader intellectual currents diverting central European culture away from the Christian tradition.

It is clear that Khunrath was deeply troubled and aggravated by such tendencies and, at the time that Studion and Hess were evolving their system, he may have turned to Weigel's theosophy as a basis for recentring Christ at the heart of hermetic concerns. Khunrath's view of the role of Christ is far more specific than that of the subsequent Rosicrucian Manifestos. For example, in the 1595 *Amphiteatrum*, he states that God was reconciled with humanity through the blood of the cross, which is identified with the Paracelsian "Salt" (MS Alnwick 571: Par, 237), while in the *Chaos* of 1597, he equates the "Ruah-Elohim" with Christ, on the model of Reuchlin (*Chaos*, 1616 ed: 85). He also describes Christ as the

¹⁶ Yates, *Rosicrucian Enlightenment* (1986), pp. 247, 249-51.

¹⁷ Montgomery, pp. 236-37; Yates (1986), *passim*.

¹⁸ Montgomery, quote from p. 176, see also p. 204 and n. 158.

¹⁹ Montgomery, p. 232. Samples of the text of the *Naometria* are provided by Gilly in *Cimelia Rhodostauritica* (1995), p. 21. See also Peuckert, *Pansophie. Das Rosenkreutz* (1973), 3, pp. 29-31. The general background of German chiliasm is described in Peuckert, *Die Grosse Wende* (Hamburg: Claassen and Goverts, 1948), pp. 299-474.

²⁰ Montgomery, pp. 175-77; Peuckert, *Pansophie* (1956), 2, pp. 290-68; Peuckert, *Pansophie. Das Rosenkreutz* (1973), 3, pp. 16-31; Frick, *Die Erleuchteten* (1973), pp. 149-52, 162, 325.

²¹ Stoeffler, *Rise of Evangelical Pietism* (1965), pp. 200-10.

²² Gilly in *Cimelia Rhodostauritica* (1995), Item 29, p. 21.

second Adam, the Logos, who redeemed the world through the sacrifice of his blood (*Chaos*, 1616 ed: 86). Through-out his work he constantly reiterates that Christ is the union of soul and flesh, God and humanity, as the philosopher's stone and the universal panacea. Finally, in the "calumniatores" image of 1602, the centre of the picture is occupied by the "annulus" of the cabbalistic Christ. If these statements are compared to the references to Christ in the Manifestos, it becomes apparent that their use of Christian doctrine is slight.

In the period 1595 to circa 1620, Khunrath placed an unusual emphasis on the structural role of Christ in his theosophy, the nearest resemblance to his alchemical system being found in the mystical writings of Jacob Boehme (1575-1624). It is probable, in fact, that, from the date of the 1595 *Amphiteatrum*, Khunrath was removing himself from the euphoric intellectual experimentation of chiliastic circles, such as those at Tübingen, which were relatively politically secure. Increasingly, he grew more concerned with the encouragement of reformist pietism in the devastated religious community of the eastern Lutheran states. Thus, Khunrath in the late 1590s had more pressing issues at stake than those of the academic hermeticism of Tübingen, his unsatisfactory relations with members of that coterie being evidenced by an indirect reference to his work in the *Confessio*. Eco has suggested that its authors' pejorative citation of the "strange figures and dark words" of certain illustrations may refer to the 1602 series of engravings in the *Amphiteatrum*.²³

Hence, the chronology of Khunrath's ideological development within this reformist context seems to be as follows; in 1595 Khunrath adopted a determined Christocentric position, abandoning the calm tone and relatively prosaic theory of the *Athanor* and *Magnesia Catholica* in the course of composing the first version of the *Amphiteatrum* (1595). In this treatise, he introduced Paracelsian alchemy and Christian cabbalism into his alchemical theory, mentioning his opponents, the "black magicians" for the first time. It was then that he initiated the concept of Christ as the philosopher's stone based on the cabbalistic theories of Agrippa and Reuchlin, equating the concept of the "azoth" with the "Ruah-Elohim", the Second Person of the Holy Trinity and the Creator-God. This concept was integrated with Paracelsus' theosophical system and also with his chemical theory of the aerial virtue. In Khunrath's alchemical theology, Christ

²³ Eco, p. 14. For the role of Andreae in the composition of the Manifestos see Dickson (1998), pp. 71-80 and Gilly, *Das Erbe der Christian Rosenkreutz* (1988), pp. 70-72, as well as Gilly, *Cimelia Rhodostaurotica* (1995), pp. 30-42, 50-52. Also see Frick, *Die Erleuchteten* (1973), pp. 145-58.

became the light of Eternal Wisdom, pitted against materialism and paganism in contemporary philosophical circles, as well as against hypocritical Lutheran scholasticism. In the succeeding alchemical treatises of circa 1597-1604, especially in *De Igne Magorum* and the second version of the *Amphiteatrum*, Khunrath produced an even more sophisticated theosophy in which Christ became the aetherial fire of the oriental magi. In addition, he gave his theories an added touch of mystical glamour and visionary appeal in 1602 by the production of the five rectangular engravings, as a defensive mechanism against the unchristian strategies of both bacchantic hermeticists and arid sophists.

The publication of the 1602 edition of the *Amphiteatrum* may have been suppressed by Khunrath's enemies, who were likely to have been the Lutheran subscribers to the Saxon Book of Concord. This version, from the evidence of MS Alnwick 571, had retained the original brief text of 1595. The expanded text, which was eventually published in Hanover in 1609, would, therefore, have been composed between 1602-1604 and Khunrath may have intended this to appear in 1604, in order to counter the effects of Studion's *Naometria*, which was due to be published in the same year.²⁴

Regardless of his conflicts with some of its forefathers, Khunrath's alchemical theosophy was subsequently adopted into the Rosicrucian discourse, while, paradoxically, Andreae, in the *Mythologiae Christianae*, produced a scathing public criticism of the movement that he had helped to initiate, castigating instead Khunrath, among others, for instigating its programme.

The seemingly embittered relations of Andreae with the Rosicrucians by 1619 have puzzled many scholars, especially Yates who attempted to prove, that he had, in fact, retained his original beliefs in the possibility of an ideal Brotherhood of teachers and healers, who would promote the reformed religion.²⁵ Dickson has made a slightly different case for Andreae's attitude, arguing that the public disreputability of the occultist currents within Rosicrucianism threatened his position as a Lutheran pastor, necessitating a public rejection of them. But, in his *Christianopolis*, also published in 1619, there are statements indicating his continued sympathy with the original goals of the Brotherhood.²⁶ Other scholars, such as

²⁴ The millennial significance of the year 1604 and the appearance of the new star in the signs of the Serpent and the Swan has been discussed in Peuckert, *Pansophie. Das Rosenkreutz* (1973), 3, pp. 39-44.

²⁵ Yates, *Rosicrucian Enlightenment* (1986), pp. 140-55.

²⁶ Dickson (1998), pp. 80-88.

Gilly, have not found reason to question Andreae's fidelity to his youthful ideals and hermetic companions.²⁷

In the foreword to the *Mythologiae Christianae*, Andreae urged submission to the rule of Christ, attacking much the same range of heretics as Khunrath, namely tyrants, heretics, epicureans, sophists. Ranged on the other side, against these evil-doers, were a group of reformist theologians, several of whom, such as Arndt and his own father Jacob Andreae, had been influenced by Weigel's Paracelsian theosophy. Andreae also expressed his regard for Erasmus, Melancthon and Johan Brentius, all of whom had displayed unconventional traits in their ideas with respect to the established Church of their time. He also praised Luther himself. All of these figures were described as being heroes of the reformed Christian faith, with special applause being awarded to Arndt for his conversion of groups of heretics (Andreae, 1619, Bk. 1: 5-6). In the *Mythologiae Christianae*, Andreae also expressed, in very clear terms, the fact that he had serious doubts concerning the use of cabbalism in uncovering spiritual, or intellectual knowledge (Andreae, 1619, Bk. 1: 26-27). He considered the use of this system to be an affectation, which was deliberately obscurantist and quite inappropriate for Christian use.²⁸ This "lingua Damcarica" (cabbalism), originated in the work of Jakob Brocard, Julius Sperber, Valentin Weigel, Aegidius Gutmann, Sebastian Franck, as well as the Catholic French cabbalist Guillaume Postel. Andreae also named Simon Studion in this context.²⁹ Some of these had been an influence on Arndt himself, although Andreae chose to disregard this fact. Furthermore, he included Khunrath in this list.

²⁷ Gilly, *Das Erbe der Christian Rosenkreutz* (1988), pp. 70-72; Gilly, *Cimelia Rhodostauritica* (1995), pp. 30-42, 50-52.

²⁸ Andreae, *Mythologiae Christianae* (1619), Bk. 1, p. 27: "Nam dum per kabalam de manu ad manum. ab aere in aurem traduntur, et multis hieroglyphicis aenigmatibus, symbolis, aliisque mysteriis peraguntur, fit, ut hominem oculi semper obvelentur, aures obturentur, nares oppleantur, ora frenentur, manus viciantur, tibiae compendiantur, corpora omnium miserrimo, turpique fervitio mancipentur".

²⁹ Andreae, *Mythologiae Christianae* (1619), Bk. 2, pp. 137-38: "23. INSOLITA. Azoth ille (quocunque tandem inter nos nomine appellitur) orbis monarcha, apud nos aureo curru, eoque radiante ingressus, haud paucos insolitae eruditionis homines secum attulit, e quibus hi pauci, ac vix nomine nostris innotuerunt, Paulus Scalichius, Jac. Brocardus, Paulus Lautenfaccus, Julius Sperber, Valentinus Weigelius, Aegidius Gutmanus, Heinrichus Kunradus, Sebastianus Franck, Guilhelmus Postellus, Martinus Cellarius, Simon Studion, reliqui etiamnum nobis conciliandi sunt. Iis, aiunt, datum, res nostras omnes medicare auritos nos, oculos, vocales, volatilesque facere. Est tamen aliquid quod felicitatem nostram impedit, quoniam non illi nos, non nos illos intelligimus. Nam quae illorum est Persia, Chaldaea, Brachmannica, Druidica, Fessana, Damacarica lingua, quae picturae sunt divinationes, triplicitates et paradoxa, eae haud prius nobis vitam reformabunt, quam artis terminos capiamus".

In contrast, Andreae presented a supportive, if very subtle, account of Tobias Hess, vindicating him of all doctrinal irregularity, probably due to the fact that he continued to associate with Hess even at the time when he was accusing other proto-Rosicrucians of heretical ideas.³⁰ The scenario in the *Mythologiae Christianae* involves the fictional dissection of Hess' body by the most illustrious anatomists of the Renaissance, including Vesalius. Each of his vital organs is found to be in perfect condition, red with the blood of Christ. His brain is white as snow, since he had freed himself from all the excrement of his curiosity. By this allegory, Andreae was implying that Hess had undergone a conversion in the direction of sound orthodox Christian doctrine, abandoning his earlier occultist proclivities (Andreae, 1619, Bk. 1: 22-23). Whether this assertion is to be accepted is another matter, since there is no other evidence to support Andreae's contention.³¹

Thus, either Andreae's disparaging account of the "lingua Damcarica" and its originators in the *Mythologiae Christianae* is simply a political contingency, to be disregarded in any serious analysis of his real position, or he is attempting to rescue the name of one specific friend, while condemning Hess' original mentors out of genuine mistrust. Hence, if Khunrath was on poor terms with Hess, this would partly explain his consignment to the tip of unsatisfactory theosophists, regardless of the fact that his theological and political ideals had much in common with those of Arndt and Andreae.

Andreae was fearful for his own position in a war-torn Germany and it is difficult to establish his true motives in his later writings, but it is clear that he was trying to distance himself from the most notorious claims of the Rosicrucian texts, especially ridiculing their self-image as healers of the sick using Paracelsian alchemical remedies (the "azoth"). It is also possible that Andreae, although he may have remained privately loyal to the idea of a brotherhood of moral reformists, in his need to disassociate himself publically from the most publicised extremists, felt compelled to reject Khunrath's work, specifically the *Amphiteatrum*, whose presence in the political arena was far from subtle. Whatever his misgivings concerning black-magic, Khunrath had not diminished his admiration for the mystical and magical systems of Agrippa, Paracelsus and the cabbalah. In a precarious public context, Khunrath's careful distinction between his own type of Christian cabbalism and that of chiliastic figures, such as Studion, was likely to be ignored. Thus, by 1619, he was being

³⁰ Dickson (1998), p. 77.

³¹ Dickson (1998), pp. 32-35, 65-67, 71, 77, 88.

promoted as a proto-Rosicrucian, which may have forced Andreae to turn against him. Furthermore, if Khunrath had earned the animosity of the scholastic Lutherans, as well as that of the court of Dresden under Christian II and of his Imperial ally then it may also have served Andreae's political purpose to be seen publically denouncing him.

By 1619, these events were in the past and it is possible that Andreae had simply tired of Khunrath's laboured and often hysterical verbosity, finding it ridiculous, in the same way that he described cabbalism itself as a useless game. In fact, one of Andreae's most brilliant satires in the *Mythologiae Christianae* is that on Khunrath, in the disguise of a pedlar selling quack medicines in the market-place and intimidating the public with his pretentious "bombitarantatarantia". He offers for sale holy-pictures with specious titles drawn from his various treatises

pyxides cum speciosissimis titulis, Christiano-cabalicum, Divino- Magicum, Phicochymicum, Tertrium Catholicon, Hallelui-Iah, Chaos Magnesiae, Pyramis Triumphalis, bonum Macrocosmicon, ... et similia Orbimperipotentia ficuncta, undiquoquoversum bombitarantatarantia, verbocinatoria & c.
(Andreae (1619), Bk. III: 271)

Nonetheless, apart from the sonorous monotony of his symbolic language, Andreae's major objection to Khunrath seems to have been that his alchemical medicines did not work and, therefore, he was of no value to Andreae's most sacred concern, that of the public good. Hence, in this satire, he was accusing Khunrath not of heresy, but of stupidity. In short, Khunrath had failed to redirect the impacted, conceptual signifiers of hermeticism into an unequivocal pietistic context like that of Arndt. As a result, his alchemical system had collapsed into the common pool of popular occultism.

Despite Andreae's lack of enthusiasm for Khunrath's theosophical alchemy, it provided the inspiration for two of the earliest and most enthusiastic advocates of the Rosicrucian Brotherhood, Michael Maier and Robert Fludd. The influence on Maier was restricted to specific motifs chosen mostly from Khunrath's graphic repertoire, since Maier's pietism was muted and indirectly expressed and he did not make extensive use of cabbalism. In contrast, Fludd's discovery of Reuchlin's cabbalism and Khunrath's pietistic discourse revolutionised the Paracelsian system of his *Utriusque Cosmi ... Historia* in its last volume, the "Microcosm" (1621). Its fervent cabbalistic Christology, and its transposition into a medical context, recalls Khunrath's embattled polemic twenty years earlier.

CHAPTER ELEVEN

MICHAEL MAIER'S ALCHEMICAL GEOMETRY OF THE SUN

The classical erudition of Michael Maier's alchemical treatises are a world apart from the passionate intensity of Khunrath's embattled theosophy. Maier's main source for his alchemical symbolism was classical legend, while his impeccable literary style is modelled on the best ancient authorities. His work, in fact, emerges from the context of courtly humanism, rather than out of the academic discourses of the Protestant universities. In contrast, Khunrath's work was written primarily for a pietistic, local German community, while Fludd addressed a learned, international audience of natural philosophers and theologians.

Michael Maier (1568-1622), as a Palatine count, moved among a leisured group of educated aristocrats, accustomed to the visual spectacle and musical entertainments of the court. These determined the style in which he presented his ideas, since he modelled his work on the aristocratic pastimes of his age including the private theatre of the court. For example, the *Atalanta Fugiens* takes the form of a masque, with stage sets displaying scenes from classical mythology, accompanied by a musical score. His other treatises are also intended to instruct by means of entertaining devices, such as the anecdotal accounts of important alchemists in the *Symbola Aureae Mensae*, while the *Cantilenae Intellectuales* employs an expressive, lyrical mode. Maier structured his alchemical theory mainly in the form of stories for a courtly audience.

Although Maier was himself a member of the central European aristocracy, he had trained as a physician and was employed at the court of Rudolph II in Prague.¹ He subsequently travelled around Germany and Holland, arriving in England in early 1612 where he was similarly attached to the highest court circles, until his departure for Bohemia in 1618. There exists a Christmas card addressed to James I and to Henry, Prince of Wales, in which the greeting has been constructed by Maier in the shape of a rose. It has been cited by Adam McLean as evidence of Maier's Rosicrucian convictions.² He was, in fact, among the first to

¹ For Maier's biography see J. B. Craven, *Count Michael Maier* (Kirkwall, 1910).

² Adam McLean, "A Rosicrucian Manuscript of Michael Maier", *The Hermetic Journal* (1979): 1ff. Maier's Rose is found in British Library MS Royal 14B XVI. See also Ron Heisler, "Michael Maier and England", *The Hermetic Journal* (1989): 119-25.

publish a supportive commentary on the Rosicrucian Manifestos in his *Themis Aurea* (1618).

The internal evidence of Maier's treatises indicates that, during his stay in England, he had been influenced by the Paracelsian alchemy of Robert Fludd. Although there exists no documented evidence of their direct connection, they could have encountered each other in the same court circles. Yates has even suggested that Maier in 1616 transported the manuscripts of Fludd's *Utriusque Cosmi ... Historia* to the publisher, Johann Theodore de Bry, in Oppenheim.³ Moreover, the meteorological theory and imagery of Maier's *Septimana Philosophica* (Frankfurt: Luca Jennis, 1620) is related to that of Fludd in his "Microcosm" (*UCH*, 1619).⁴

In contrast to Dee, Khunrath and Fludd, Maier infrequently referred to the cabbalah, occasionally employing some general concepts, but never applying the system methodically. Instead, he based his alchemical programme on geometry, which was itself the subject of one of his earliest treatises on the Euclidean problem of squaring the circle, *De Circulo Physico, Quadrato* (Oppenheim: Luca Jennis, 1616). Maier, like Khunrath, used the image of the squared circle as a theurgical sigil, representing the spiritual and alchemical union of opposites in the "azoth". A circle appears on the title-page of his treatise, bearing the names of the four universal qualities, "calidum siccum frigidum humidum", while a rectangle lists the four elements. The main subject of this essay is the Paracelsian theory of the universal panacea, the potable gold which ensured both physical and spiritual health, due to its concordance of the macro- and microcosms. These were signified by the sun, the human heart and gold, the sun being an image of God himself.⁵ According to Maier, the universal panacea resolved the problem of the squaring of the circle (Maier, 1616: 4).

Maier explained that, according to Plato, the perfect form of eternal Being was the circle and this was also the essential form of gold, the most perfect substance in the physical world (Maier, 1616: 11), since the circle is the form of nature when she has been quieted from her compulsive motion (Maier, 1616: 12). In this idea, he was following the well-known

³ Yates (1986), pp. 80-90.

⁴ Michael Maier, *Septimana Philosophica* (Frankfurt: Luca Jennis, 1620), pp. 34 ff, "De Meteoris", see frontispiece and illustration on p. 31.

⁵ Maier (1616), p. 6:

Utque Deus Soli, Sol auro, denique cordi
Vim dat, et hoc verso respicit orbe Deum:
Omnia ab hoc et ad hunc mortalia conditadunt,
Circulus hic, quicquid constat ubique, replet

Dee uses the same idea see Shumaker, pp. 158-61.

argument of Aristotle in *De generatione et corruptione* that anything which moves is by nature imperfect, since it is prone to corrupting changes. Consequently, the static circle is nature perfected,⁶ manifesting in the physical form of red, coagulated sulphur, or gold.⁷ Maier referred to the alchemical theories of the pseudo-Lullian *Testament*, in particular, to their concept of the "rotation" of the chemicals, stating that in order to purify sulphur, the "soul" of gold, the alchemist needed to apply the perfect form of the circle, in other words he needed to use the rotational forces of distillation.⁸

He also quotes from the *Rosarium* concerning the geometrical figures of the circle, square and triangle which represent the masculine and feminine qualities (Maier, 1616: 11).⁹ An illustration of this geometrical relationship appears in his later compendium of alchemical treatises, the *Tripus Aureus* (Frankfurt, 1618), in which the emblem accompanying the seventh key of Basil Valentine's *De Lapide Sapientum* depicts a circle, squared internally, with a triangle within the square labelled "Aqua". The circle represents "Chaos", while the square symbolises the four seasons.¹⁰ The same relationship of circle, square and triangle appears in the illustration to Emblem XXI of the *Atalanta Fugiens* where a geometrical diagram incorporates additional male and female figures (fig. 38).¹¹

⁶ Maier (1616), p. 13: "Hic est ille Circulus Physicis, quem si natura circumgyratione sui absolverit, merito quiescit: cum post motum quies appetatur ab omnibus ... De qua loquendi ratione si quisquam dubitet, nodum, quod aiunt, Pythagoras ... illud esse Circulum, cuius centrum sit circumferentiae innatum, hoc est, homogeneam substantiam existere, cuius millesima et interior pars sit formalis et agens, reliquae materiales et formatus".

⁷ Maier (1616), p. 14: "hinc Centrum seu formam (quae est sulfur rubeum et coagulatum) in hoc Circulo, Auro ... tanquam superficiei, suam essentiam puram et denominationem dedisse".

⁸ Maier (1616), pp. 14-15: "Adhaec Circulum Aurum diximus, quia ut in rotario opere textorum observamus, stamino ex centro duci recta, superqua subtegmina circumgyrantur contiguum, donec sphaerica figura ... introducta sit, sic in auro forma ipse materiae ex materiae sinu simul semelque intertextitur".

⁹ See also Szonyi (1984), pp. 373-74, on Edmund Spenser's use of the same concept in the *Faerie Queene*.

¹⁰ Michael Maier, *Tripus Aureus* (Frankfurt: Luca Jennis, 1618), p. 407.

¹¹ Michael Maier, *Atalanta Fugiens* (1618) pp. 92-95. On p. 93 the text reads: "Fac ex masculine et foemina circulum, inde quadrangulum, fac circulum et habebis lapis Philosophorum.

Epigramma XXI

Foemina masculineque unus fiant tibi circulus, ex que
Surgat, habens aquum forma quadrata latus.
Hinc Trigonum ducas, omni qui parte rotundam
In sphaeram redeat: Tum LAPIS ortus erit.
Si res tanta tua non mox venit obvia menti,
Dogma Geometria si capis omne scies.

In his *De Circulo Physico, Quadrato* Maier states that the incorrupt nature of gold proves that the circle, as its essential form, is not an abstract mathematical concept, but a physical reality.¹² For the congregation of the sun's rays creates its beautiful circular shape¹³ and gold is central to human activity, as if it were a sun within the earth.¹⁴ Thus, on the model of the relationship of the centre to the circumference of the perfect circle, gold is the centre of all things.¹⁵ Moreover, gold as a colour is the union of opposites, those of the white female and the red male aspects.¹⁶ Hence, since gold is perfection itself, its essential nature must be spiritual (Maier, 1616: 28, 46).

Another of Maier's fundamental tenets was the traditional idea that both the cosmic order and the human-being as its reflection were governed by the musical ratios of the Pythagorean octave, the sun in the midst of the macrocosm corresponding to the heart in a human-being (Maier, 1616: 7). In fact, he appended a lyric verse to *De Circulo Physico, Quadrato*, a "Cantilena Anacreontia" eulogising the properties of gold (Maier, 1616: 75-79). Slightly later, he composed another alchemical song set to a musical score in the *Cantilenae Intellectuales* (Oppenheim, 1617), in which the philosopher's stone was symbolised by the myth of the Phoenix, possibly an allegory of Christ, although this was not specified.¹⁷ Moreover, the fifty alchemical emblems of the *Atalanta Fugiens* (1617; 1618) were also accompanied by a musical score of fugues for three voices, providing a series of meditations on the spiritual significance of alchemy.

Godwin and Streich have analysed the musical structure of the *Atalanta Fugiens*, concluding that Maier's composition should be regarded as a

¹² Maier (1616), pp. 15-16: "Hic est circulus ab natura ipsa circumscriptus, non imaginatione mathematica, sed reali et Physico ductu delineatus".

¹³ Maier (1616), pp. 15-17: "Hoc est lutum splendidum rota et manu maximi illius et omnipotentis figuli sub artum foretumque in substantiam pulcherrimam, in qua radii solares congregantur et elucent, haud dubii testes illius aetheriae claritatis et lucis, in terrestri materia detentae et portatae".

¹⁴ Maier (1616), p. 23: "Aurum, quasi Solem terrenum, a quibusdam dictum, esse centrum omnium humanarum actionum, veluti coelestis planetarum".

¹⁵ Maier (1616), p. 24: "Ita ab auro res precio et aestimationi subjacentes aequaliter distant, hoc est, Geometrica proportione, vel, si movis Arithmetica omnes ab uno auro determinantur, earumque valor".

¹⁶ Maier (1616), pp. 26-27: "Color in auro non pallidus est ... sed Citrinus, qui ex rubeo et albo, mixte inter se proportionabiliter generatur, utpote medios inter extremos, nigrum et album. Hic enim ut nimis dispergit visivam virtutem et ille in arctum contrahit, sic Citrinus color oculorum aerem, quemadmodum et viridis, reficit, in mediocritate conservat et delectat".

¹⁷ Sylvain Matton and Jacques Rebotier, *La Musique des Cantilenae Intellectuales* (Alençon: J-C Bailly, 1984), passim.

conceptual art-work, rather than as a practical score to be used in a real performance. His musical forms were based on those of the "cantus firmus" of Gregorian chants, although he provided only three voice-parts, rather than four or five as was customary.¹⁸ The unresolved dissonances in the score could have been an intentional aspect of its design as programme music, describing the story of the race between Atalanta and Hippomenes. The mythological story, however, is only depicted once on the title-page, although it is described by the analogous construction of the musical score.¹⁹ There is no direct reference to these protagonists within the sequence of illustrations, nor in the textual discourse, the myth standing only as a central trope in which the race for the golden apple signifies the quest for the philosopher's stone and the union of Atalanta and Hippomenes represents that of the female and male principles of alchemy. According to Streich, the structure of the musical score reflects the alchemical process, with the three voice-parts referring to the Paracelsian alchemical principles, Sulphur, Mercury, Salt, in their essence as spirit, soul and matter.²⁰ The voices also represent the three mythic characters of Atalanta, Hippomenes and the golden apple. Most significantly, Streich has noted that the sequence for the apple voice wanders from the higher to the lower pitch, as if it were describing the process of distillation.²¹ The fugue also runs as a mirror canon, or canon by inversion, in respect to the voices of Atalanta and Hippomenes.²² Since music in the Renaissance represented the intellectual and spiritual spheres of the cosmos, its presence in Maier's alchemical treatise metaphorised the nature of alchemy as a process unifying the micro- and the macrocosm.²³

As in de Vries' engraving for the *Amphiteatrum*, the musical motif alludes to Boethian musicology in which Pythagorean geometric ratios regulated the cosmic structure. The tonal sequence of Maier's composition was based on the Pythagorean octave in which the third and sixth intervals were not considered to be consonant. Godwin and Streich have not discussed the philosophical implications of Maier's Pythagorean score, although Streich made an important point in her brief mention of the

¹⁸ Joscelyn Godwin, *Atalanta Fugiens. An Edition of the Fugues, Emblems and Epigrams* (Phanes Press, 1989), p. 13. See also the less extensive references to Maier's composition in H. M. E. de Jong, *Michael Maier's "Atalanta Fugiens"* (Leiden: E. J. Brill, 1969), pp. 3ff and passim.

¹⁹ Godwin, p. 14.

²⁰ Streich in Godwin (ed), *Atalanta Fugiens*, p. 27.

²¹ Streich, p. 43.

²² Streich, p. 61.

²³ See also the discussion in Christoph Meinel, *Alchemie und Musik*, (Wiesbaden: Herzog August Bibliothek, 1986), pp. 201-27.

fact that in certain parts of the fugues the fifth interval defines the structure of the composition and that it represents the sun (the golden apple). The effect of adding Pythagorean musical ratios to Maier's alchemical imagery was that it transformed them into theurgic talismans. Just as Dee's and Khunrath's use of Pythagorean geometry was a means of capturing the astral forces in their theurgic sigils, in the same way, Maier's Pythagorean music attracted the celestial powers into his emblems, turning them into magical instruments. In particular, the fifth interval, representing the solar rays and the philosopher's stone, magnetically attracted the sun, introducing a potent theurgic charge into the alchemical procedure. (This motif may have even been a reference to the process of distillation by the heat of the sun). Reinforced by the music, Maier's emblems were intended to become transmutatory instruments of the same type as the catoptrical mirrors described by John Dee in the *Monas Hieroglyphica* and the "annuli" pictured by Khunrath in the *Amphiteatrum*.

In these ideas, Maier could have been influenced by a reference in the *Propaedeumata Aphoristica* (1568) where Dee had compared the harmonic structure of the world to that of the chords of a lyre, alluding thus to the Pythagorean tonal sequence and its cosmological function. Dee may have encountered this concept in the eighteenth discourse of the *Corpus Hermeticum* whose theological system describes the divine forces of the stars, the planets and the sun in their effect on the human intellect. In the eighteenth discourse, Asclepius directs King Ammon to "tune the inward lyre and adjust it to the [divine] musician". Moreover, Ficino had referred to the theurgic force of the fifth interval, the "diapente", whose relationship of 3: 2 he stated to be the ratio of the distance from the earth to the sun, compared with that from the sun to the fixed stars. Hence, the perfect fifth in Ficino's astral magic was a musical signifier of the sun.²⁴

Fludd had already produced an illustration of the cosmic lyre in the "Macrocosm", a sequence of Pythagorean octaves relating the physical world to God (*UCH*, 1, 1617, Tract I: 92). In his musicology he ignored the modifications gradually introduced into the Pythagorean harmonic scheme by Renaissance polyphony, which in 1599-1607 had forced Kepler to admit an empirically consonant third and sixth into the Pythago-

²⁴ Discourse XVIII in Copenhaver, *Hermetica* (1992), p. 64. Dee's comments on the cosmic lyre are not included in the first 1558 version of the *Propaedeumata Aphoristica* see Schumaker, Aphorism XI, pp. 126-27: "Mundus iste totus est quasi lyra, ab excellentissimo quodam artifice concinnata: cuius chordae, sunt huius universitatis Species singulae, quas qui dextre tangere pulsareque noverit, mirabiles ille eliciet harmonias ... Homo autem, per se, Mundanae isti Lyrae, omnino est Analogus". See also Ficino's musicology in Allen, *Ficino's Nuptial Arithmetic* (1994), p. 29.

rean tonal mode to enable him to rationalise his astronomical system. Fludd, however, defended his own musicology against Kepler, and other opponents, by stating firmly that the Monochord was not simply a theoretical concept since his friends were using it for practical music-making.²⁵ In his argument, Fludd may have been alluding to Maier's alchemical music as a justification for his ideas, but this connection has yet to be investigated by historians of music. Yates discussed only certain aspects of the relationship between Maier's *Atalanta Fugiens* (1617; 1618) and Fludd's *Utriusque Cosmi ... Historia* (1617-21) and the musical connection was not her main interest.²⁶

Neither has any musicologist provided a detailed analysis of the specific relationship between Maier's music and the visual imagery of the *Atalanta Fugiens*. Thus, despite the pioneering work of Godwin, Streich and de Jong, Maier's illustrations still await a definitive critical study since de Jong's investigation of the textual sources of the *Atalanta Fugiens* did not involve a detailed examination of the illustrations themselves.

For the present purpose, only one image from this sequence will be considered, that of Emblem VIII since this is most closely related to de Vries' theurgic "annulus" in Khunrath's *Amphiteatrum*.

Yates has shown that there existed a close historical relationship between the *Atalanta Fugiens* and Fludd's "Macrocosm" (*UCH*, 1617; 1618) which were published almost simultaneously by Johann Theodore de Bry in Oppenheim. The artists who produced the illustrations for Maier have not been securely identified, though it is possible to discern two or three different persons at work, one of whom was probably Matthieu Merian.²⁷ Fludd's artists, on the whole, are recognisable by their signatures, which indicate that Johann Theodore de Bry engraved the first part of the "Macrocosm" (1617), the work being completed by Merian who also signed the portrait of Fludd in the *Philosophia Sacra*.²⁸ When the artistic styles of the two treatises are compared, it appears that in the *Atalanta Fugiens* the artist was inclined to depict classical architecture, whereas in Fludd's illustrations the scenes are those of medieval northern towns. The technical style is also more confident in the *Atalanta Fugiens*. Nonetheless, in contrast to the italianate architecture of the *Atalanta Fugiens*, the landscape backgrounds are archaic, belonging to the conventions of Dutch painting of the late fifteenth and early sixteenth centuries. In this tradi-

²⁵ Peter J. Amman, "The Musical Theory and Philosophy of Robert Fludd", *JWCI* (1967): 198-227, esp 218-19.

²⁶ Yates (1969), pp. 112-35.

²⁷ Yates (1986), pp. 9, 72.

²⁸ Yates (1969), pp. 70-77.

tion of two generations earlier, the background was depicted as if it were rising up the page, rather than running into the distance at eye-level. Another striking aspect of these early landscapes was the portrayal of mountains as large rocks, isolated in space. In the early seventeenth century, a new type of landscape had been developed by Rubens in Flanders with a lower horizon and a broad, atmospheric effect in which the elevated landmarks were integrated coherently into the sweep of the landscape.²⁹ In spite of these changes in pictorial style, they do not seem to have affected the artists who worked for printing-houses such as de Bry.

Salomon Trismosin's *Splendor Solis* (Rorschach, 1598)³⁰ may have provided some visual prototypes for the architecture and landscape in Maier's engravings, for example, the illustration to the Seventh Parable shows an ancient king in an alchemical bath standing over a furnace on a "pavimentum diminutionis". The architectural setting of this image, set in the open-air, may have influenced the outdoor setting of Maier's Emblem VIII. The central concepts of the *Splendor Solis* originated in the *Rosarium Philosophorum*, which, according to de Jong, was the major source for the *Atalanta Fugiens*. McLean emphasised the important influence of Trismosin's work on later alchemical ideas, commenting that

The *Splendor Solis* ... acts as a bridge between the *Rosarium* and the Rosicrucian period.³¹

The alchemical theory of the *Atalanta Fugiens* draws most of its detailed references from medieval sources, although these are contextualised within a Paracelsian framework centred on the quintessence. Maier often takes recourse to the pseudo-Lullians, specifically to the earliest texts in the corpus, such as the *Testament*, which emphasise the process of transmutation, rather than the making of the universal panacea.³² He is also more inclined to use the medieval Aristotelian theory of the four elements, instead of the three Paracelsian principles. On the other hand, the theoretical programme of the *Atalanta Fugiens* also exhibits more contemporary astrological interests, signified by the stars of the Zodiac which appear in Emblem XXVII (Maier, 1618: 118-119) and Maier frequently recalls the theurgic powers of the solar rays, as in Emblem XLV which depicts the eclipse of the moon (Maier, 1618: 190-191) (fig. 39). This

²⁹ Wolfgang Adler, *Landscapes (Corpus Rubenianum Ludwig Burchard)* (Harvey Miller; Oxford UP, 1982), 18, pp. 21-35; W. Stechow, *Dutch Landscape Painting of the 17th-C* (London, 1966), passim; Yvonne Thiery, *Le Paysage Flamande au XVII^e e Siecle* (Paris; Bruxelles, 1983), passim.

³⁰ Adam McLean (ed), *Salomon Trismosin. Splendor Solis* (Phanes Press, 1991), pp. 7-9. McLean notes that the earliest manuscripts of this treatise date from circa 1532-5.

³¹ McLean, *Trismosin. Splendor Solis* (1991), p. 8.

particular image was taken from the *Rosarium*, in which the analogy of the sun and its shadow appears in its account of the illumination of the alchemical substance by the sun.

The use of catoptrical mirrors as a source of heat is described in Emblem XXIII where Maier explains the manner in which celestial influences are transmitted to the earth by the sun's rays (fig. 40). The illustration shows the alchemist, clad in the martial robes of Mars, splitting the head of Saturn to release the form of Pallas Athena. In the background appears a statue of the Apollo of Rhodes, whose head is encircled by an aureole of light. Meanwhile, on the right of the picture the sun-god engages in sexual dalliance with Venus, while storm clouds shower rays of coins. The conjunction of the sun and Venus is a catoptrical hieroglyph in which the sun's rays are caught by a mirror (the emblem of Venus). Maier's commentary explains the meaning of the image as being related to the use of catoptrics.

With plants and animals reproduction takes place by means of seed, but with simple bodies or bodies of a simple composition this takes place by introducing force and by means of assimilation.

Thus, the sun, the celestial luminary, sends its beams to the earth and when these beams are bundled in a sun-glass, shapes are seen, which are, as it were, form projections of the sun. On these grounds it is established that sunbeams are nothing but flames of fire, which are spread out over a wide space; when, however, they are focused, they burn everything that comes within the point of focus³³

Maier frequently refers to the secret fire of alchemy, the quintessence, as in Emblem XXXVII (Maier, 1618: 158-59).³⁴

The quintessential fire is the theme also of Emblem VIII, which alludes to alchemical geometry and catoptrics (fig. 41) on the model of de Vries' engraving for Khunrath's *Amphiteatrum*. The illustration displays an armed warrior (Mars) standing in front of a roaring fire in the process of shattering the alchemical egg with his sword. In the immediate background there is a battlemented wall, pierced by a curious tunnel drawn in a diagrammatic form according to the rules of single-point perspective. It should be noted that its excessive depth does not correspond with the actual thickness of the wall. Another important feature of this image is its box-like spatial construction which does not recur in any of the other illustrations in the *Atalanta Fugiens*, which customarily depict only one

³² On the pseudo-Lullian corpus see Pereira (1989), pp. 22-25. For medieval aspects of Maier's theory see the examples in Maier, *Atalanta Fugiens*, pp. 14-15, 46, 64-67, 77-78.

³³ Translation by de Jong: *Atalanta Fugiens*, Emblem XXIII, pp. 100-3.

³⁴ See also Maier (1618), p. 46.

wall, with a vanishing-point set at the edge of the picture rather than in the centre as in Emblem VIII.

The subject of this illustration is the impregnation of base matter by the seed of gold carried in the sun's rays, as explained in the commentary (Maier 1618: 42-43). In the picture, these solar forces are signified by the perspectival structure of the tunnel. De Jong has compared the egg in Emblem VIII to the illustration of the macro-microcosmic egg in Dee's *Monas Hieroglyphica*.³⁵ In the practical process, the chemicals were sealed inside an alchemical vessel known as the egg, within which they were distilled, the process being said to generate a new, more spiritual, form in the original base materials (Maier, 1618: 41-42).³⁶

The warrior in the picture represents Mars and the reader is told to add Mars to Vulcan (the furnace) in order to gain the victory. Like that of Khunrath's *De Igne Magorum*, the theme of Emblem VIII is the Paracelsian inner and outer fire, that is, the innate astral virtue and the celestial quintessence. The picture, thus, depicts the fiery virtue carried in the sun's rays of light which is the essence of earthly fire. The text continues with references to the Paracelsian alchemy of Basil Valentine, specifically to his use of the symbols of Mercury, Vulcan and Mars. The reader is instructed to add Mars only when the whole matter has putrefied in the heat, since Mars animates the material, perfecting it and granting it eternal life, a process comparable to the growth of the foetus in the womb.³⁷

³⁵ De Jong, pp. 95-100.

³⁶ Maier (1618), p. 41: "Emblema VIII: Accipe ovum et igneo percute gladio;
Epigramma VIII
Est avis in mundo sublimior omnibus, Ovum
Cuius ut inquiras, cura sit una tibi.
Albumen luteum circumdat molle vitellum,
Ignito (ceu mos) cautus id en se petas:
Vulcano Mars addat opem: pullaster et inde
Exortus, ferri victor et ignis erit;

Discursus VIII Multa et varia sunt avium genera, quae ut numero indefinita, ita nominibus incognita nobis existunt. De quadam praegnandi Ruc dicta in insula parva oceani certo anni tempore apparente narrant, quos Elephantum secum in aera possit attollere. India et America dant varii colores psittacos, corvos et his similes. Verum harum ove conquirere non est intentiones Philosophicae; Aegyptii ova crocodilorum fero annuatim infestant ... : Philosophi ovum suum igne percutiunt, non ut deleatur et pereat, sed vitam accipiat et crescat ... Calor exterior primum movens est, qui circulatione quadam Elementorum uniusque in aliud commutatione formam novam introducit, naturae instinctu aut ductu".

³⁷ Maier (1618), p. 42: "Hoc est quod Basilius Valentinus asserit Mercureum a Vulcano carceri inclusum esse Martis iussu, nec emissum, antequam putrefactus totus et emortuus fuerat. Verum haec Mars illi vitae novae initium existit, ut ovo corruptio seu mors novam pulli generationem et vitam adfert".

The spurious "Basil Valentine" was one of the earliest alchemists to record the use of light-rays in practical chemistry. Maier himself had knowingly, or otherwise, promoted the myth of this, supposedly, fourteenth-century monk, although, in fact, the tenor of Valentine's work is Paracelsian.³⁸ The text known as the *Twelve Keys of Basil Valentine* was first published in Germany in Einleben in 1599, edited by Johann Tholde who was probably its real author.³⁹ Maier published a Latin version of Valentine's treatise in his *Tripus Aureus* (1618) which he provided with visual imagery by Merian.⁴⁰

In another work by Valentine, *Der Triumph-Wagen Antimonii* (Leipzig, 1604), there is a specific reference to the practical use of sun-light in alchemy. The aim of the work is the purification of antimony in order to make a potable medicine. The recipe instructs the reader to pound the pure glass of antimony and place it in a cucurbit, pouring some rectified vinegar over it. It should be subjected to a digestive fire, or in the summer exposed to the rays of the sun. Eventually, the material will acquire a reddish colour, like well-purified gold, at which point the liquid should be poured off until no more of the colour remains. Sun-light is employed again in the process of digestion later in the work. The reddish colour of the liquid, supposedly, indicated that the virtue of the sun had entered the materials, but in reality, according to Principe, the redness of colour was produced by the accidental inclusion of iron in the antimony resulting in the production of ferric acetate.⁴¹

An important aspect of Emblem VIII is the fact that it is a theatre-set, which has not been remarked by scholars such as Yates, or de Jong. The background setting of Maier's Emblem VIII, in fact, resembles Fludd's "Theatrum Orbi" in his "Microcosm" (*UCH*, 1619) (fig. 42). This similarity connects Maier's Pythagorean theurgy indirectly with that of John Dee.⁴² Yates considered that Fludd's design could have been a copy of

³⁸ Partington, 2, pp. 183-203.

³⁹ There exists a manuscript of the *Twelve Keys*, dated 1582. The text was issued in a German version in Frankfurt in 1602. See Partington, op. cit.

⁴⁰ Maier, *Tripus Aureus* (1618), illustrations on pp. 407, 409, 415, 418, 420, 425. See also van Lennep, p. 198. Since it is clear from the context that the original text was always intended to carry illustrations, van Lennep considers that the imagery supplied by Maier and Merian for the *Tripus Aureus* were not the first illustrations.

⁴¹ Lawrence Principe, "Chemical Translation" and the Role of Impurities in Alchemy", *Ambix*, 34 (1987): 21-30. An English translation of the recipe can be found in Richard Grossinger (ed), *The Alchemical Tradition* (California: North Atlantic Books, 1979), pp. 34-47.

⁴² Fludd's Memory Theatre is found in the "Microcosm", *UCH*, 2 (Oppenheim: J.T. de Bry, 1619), Tract I, Sect II, p. 55.

the stage of Shakespeare's Globe Theatre. She argued that, influenced by Dee's Vitruvianism in his *Mathematicall Preface*, the stage of the public theatre in England was subsequently designed to represent the form of the unified cosmos, the "Theatrum Orbi". The ceilings above the stage were painted with astrological motifs, while the human actors below represented the microcosm.⁴³ Moreover, the stage of Fludd's "Theatrum Orbi" concurred with Vitruvian design in having a crenellated rear-wall with two openings. This back-wall was a permanent fixture, although the two side wings were moveable. Maier's stage-set has the same fundamental structure as Fludd's "Theatrum Orbi", but it resembles even more closely the "secondary stages" of his theatre of memory (fig. 43).⁴⁴ In Maier's illustration, the building on the right has an upper storey, as in Fludd's "Theatrum Orbi", but it has been displaced from centre-stage. In addition, the two rear openings of Fludd's theatre have been replaced by the diagrammatic tunnel.

If one of the sources for Maier's image was the Vitruvianism of Dee's *Mathematicall Preface*, filtered through Fludd's work, then Maier would also have known Dee's theory of "zographe", that is, his theurgical Pythagorean geometry which is described in the same treatise. The perspectival structure of Maier's Emblem VIII suggests, in fact, that this was the case. Moreover, the spatial design is comparable to Khunrath's gateway in the alchemical fortress (1602) (fig. 30) as well as de Vries' hall in the Oratory-Laboratory (frontispiece). In Emblem VIII, the perspectival cone (the diagrammatic tunnel) points heavenwards with its base above the egg, although not in a symmetrical relationship, since the vanishing-point of the cone's orthogonal lines is located to the right. Nevertheless, it is not accidental that the only perpendicular line in the whole "pavimentum diminutionis" passes directly underneath the egg and points immediately towards the opening at the far end of the tunnel. The doorway and the egg are perfectly in line, explaining why the vanishing-point of the picture is so strangely skewed to the right. The central perpendicular line of the "pavimentum diminutionis" is known as the "centric axis", indicating the vanishing-point which Alberti had always located in the middle of a painting. The perspectival centric axis is, in fact, identical with the "centric ray" of medieval optics which was the strongest and shortest ray in a cone of light.

In the *Propaedeumata Aphoristica* Dee had emphasised the theurgic power of the centric-rays emitted by the celestial spheres, which could be

⁴³ Yates (1969), pp. 112-35.

⁴⁴ Fludd, "Microsocm", *UCH*, 2 (Oppenheim: J.T. de Bry, 1619), Tract I, Sect II, pp. 58, 64.

deployed by the astronomer using catoptrical apparatus.⁴⁵ Hence, in Maier's emblem the centric axis passing through the egg to the vanishing-point symbolises the transmutatory effects of the celestial influences and it alludes to the use of catoptrics. Maier states in his commentary on the emblem that the aim of human life is to pass from a vegetable existence in the womb to the more perfect light of the macrocosm, just as when an egg is "killed" it attains the higher form of a bird. This imagery also refers to sexual impregnation which generates new life.⁴⁶ The alchemical male and female principles may die in their old forms, but, purified by fire, they will arise in the perfected form of the philosopher's stone. Hence, in Emblem VIII, the perspectival grid signifies the divine light of the heavens, the alchemical quintessence which carries the seed of gold from the sun. It is placed directly above the egg to denote the potential evolution of prime matter to a higher spiritual condition.

Therefore, the theurgic meaning of Emblem VIII lies within a set of associations inter-relating Vitruvian architecture, perspectival geometry and catoptrics, in short, the same themes explored by Dee. Consequently, Maier's emblem, like that of Khunrath, explains the theory of an alchemy of light. The diagrammatic tunnel of orthogonal lines, like de Vries' hallway, refers to Paracelsian astral influences and Dee's astrological catoptrics. This geometrical structure, with its base on the earth and its apex in heaven (signified by the vanishing-point), represents the quest for the philosopher's stone by means of celestial alchemy. Even more significantly, Maier's emblem like that of de Vries in the *Amphiteatrum* is an alchemical sigil, a catoptrical mirror reflecting the light of the quintessence. It is, in itself, a theurgical instrument whose potency is amplified by Maier's Pythagorean musical score whose motif of the diapentic interval as the golden apple of Atalanta, introduces the power of the solar rays into the process of alchemical transmutation.

⁴⁵ Shumaker, pp. 136-38, 148-51.

⁴⁶ Maier (1618), p. 42: "Sic foetui humanam vitam vegetabili (qua solam in utero matris fruebatur) defuncto, alia perfectior per transitum in hanc lucem mundanam sive per nativitatem accedit. Imo et nobis hac praesenti vitam, quam agimus, alia perfectissima et aeterna imminet".

CHAPTER TWELVE

ROBERT FLUDD: THE DIVINE ALCHEMY OF THE EYE OF GOD

In the cabbalistic theogony of Robert Fludd (1574-1637), the sun was far more than a power-house for theurgical sigils, as in Dee's system, or an aid to routine alchemical processes, since he considered it to be no less than the altar of Christ the Messiah in his form as the angel Metatron. Fludd's Christology in the 1620's is as intense and deeply-felt as that of Khunrath, but it is expressed in relatively sober academic prose and Fludd is more absorbed than Khunrath in the minute specifics of Reuchlin's cabbalism. Basing his alchemical theory on that of Paracelsus, Fludd devised not only a new version of the cabbalistic theosophy of the previous century, but also a novel system of practical medicine, whose claims for efficacy were due to its reliance on the sacred light emanating from the Creator-God (Christ) through the sun's rays.

Scholars are fortunate in being able to draw on Debus' extensive studies of Fludd's Paracelsian and cabbalistic theology, although he has not analysed Fludd's alchemical diagrams in detail.¹ These have been interpreted mostly from the point of view of twentieth-century theosophy and Jungian psychology by Godwin.² Other important work on Fludd includes Amman's musicological study in which he related Fludd's musical ideas to his illustrations, though he omitted a lengthy discussion of the

¹ The main resources provided by this scholar are Debus, (1965), pp. 86-127 and Debus (1977), 1, pp. 205-60. Additional items from Debus' prolific scholarship on Fludd are listed in the bibliography to the present study. Other discussions on Fludd's chemical theories in the context of 17th-C scientific developments include Robert P. Multhauf, "Medical Chemistry and the 'Paracelsians'", *Bulletin of the History of Medicine*, 28 (1954): 101-26 and Robert P. Multhauf, "The significance of distillation", *Bulletin of the History of Medicine* (1956): 439-46. See also Francis Sherwood-Taylor, "The Origin of the Thermometer", *Annals of Science*, 5 (1942): 129-56. A valuable resource is Josten's edition of the Bodleian manuscript of Fludd's *Truth's Golden Harrow* see C. H. Josten, "Truth's Golden Harrow, An Unpublished Alchemical Treatise of Robert Fludd in the Bodleian Library", *Ambix*, 3 (1949): 91-150. Another account of one of Fludd's unpublished treatises is C. H. Josten, "Robert Fludd's 'Philosophicall Key' and his alchemical experiment on wheat", *Ambix* (1963): 1-23. The Wellcome Institute in London also mounted an exhibition of Fludd's engravings designed for a popular audience see exhib. cat, *High Matter. Dark Language* (London, n.d.). The available bibliography on Fludd is too extensive to list in the present study.

² Joscelyn Godwin, *Robert Fludd* (London: Thames and Hudson, 1979), passim.

imagery itself.³ Fludd's engravings also frequently appear in popularised accounts of alchemy, though Klossowski de Rola did not include them in his account of seventeenth century alchemical engravings.⁴ The most extensive discussion of Fludd's intellectual development has been provided by Huffman, though he also disregarded Fludd's visual work.⁵ It is regrettable that these authorities have largely neglected Fludd's engravings, for even Godwin's admirable interpretation is directed more at an audience of twentieth century alchemical adepts. This disregard for the intellectual significance of the illustrations could lead to misinterpretations of Fludd's ideas, since, according to Yates, his visual imagery was integral to his theoretical concepts. Their importance is indicated by the fact that Fludd himself designed his pictures, determining, moreover, their specific location within the text.⁶

Fludd was a respected English physician working for the royal court, as well as a prolific encyclopaedist of hermetic and mechanical knowledge. Although his Anglican loyalties were never questioned, he achieved a certain notoriety in his own time for his early support of the Rosicrucian Manifestos in his *Apologia* (1616), expanded into the *Tractatus Apologeticus* (1618).⁷ In the development of his ideas, Fludd claimed a precocious intellectual ability, stating that he had already composed the greater part of his "Macrocosm" (*UCH*, 1, 1617) during his undergraduate days at Oxford, prior to commencing a tour of the continent in 1598-1604/5. In the course of his travels, he spent a winter with some Jesuits who tutored him on theurgic matters in the mountains on the borders of Spain and France.⁸

³ Peter J. Amman, "The Musical Theory and Philosophy of Robert Fludd", *JWCI*, 30 (1967): 198-227.

⁴ Klossowski de Rola (1988), op. cit.

⁵ Huffman, *Robert Fludd* (1988). See also William H. Huffman, "Robert Fludd's 'Declaratio Brevis' to James I", *Ambix*, 25 (1978): 69-92.

⁶ Yates, *Theatre of the World* (1969), pp. 70-77.

⁷ Debus, (1977), 1, pp. 213-15.

⁸ Huffman (1988), pp. 12-35. Fludd's *Utriusque Cosmi Maioris Scilicet et Minoris Metaphysica, Physica atque Technica Historia* was published in two volumes of four parts (two per volume) as the "Macrocosm", vol. 1, Part 1 (1617); "Macrocosm", vol. 1, Part 2 (1618); "Microcosm", vol. 2, Part 1 (1619); "Microcosm", vol. 2, Part 2 (1621). These texts were issued by Johann Theodore de Bry in Oppenheim. The "Tractatus Secundus" of the "Macrocosm" (*UCH*, 1, 1618) is very practical with little philosophical infrastructure. It considers "arithmetica universalis" (p. 5), including a section on optics (pp. 293-316) and astrology (pp. 558-714). In the third part, Fludd explains the practical and theoretical aspects of geometry. The frontispiece illustrates the system of one-point perspective with an image of a man gazing into the distance. He mentions Pomponius Gauricus, Apollodorus and Durer (pp. 320-29). Fludd is following Dee's model in the *Mathematicall Preface* which distinguished between higher and lower types of mathematical and geometrical knowledge.

In his first work, the "Macrocosm" (*UCH*, 1, 1617), Fludd devised a cosmology in which God manifested the universe through his own act of viewing, deriving this concept from the *Pymander* in which the physical creation was a mirror of God.

Deitas quasi in speculo conspicitur⁹
(Fludd, 1617, 1: 167)

In the second volume of the *Utriusque Cosmi ... Historia*, the "Microcosm" (*UCH*, 2, 1619: 25-26), he subsequently elaborated his initial concept of God's creative vision by comparing the Holy Trinity to an eye, which he, accordingly, depicted in an engraving (fig. 47). Thus, in Fludd's system, it was the optical rays of light emanating from God's divine vision which created, sustained and reabsorbed the universe. These concepts were integrated by Fludd into a lavishly illustrated Paracelsian cosmology in which the materials of the universe were separated by the alchemist God out of prime matter.¹⁰

In the "Macrocosm" (1617), however, Fludd did not refer directly to the cabbalah, employing instead the discourse of Pythagorean geometry, thereby displaying an immediate conceptual kinship with Maier's *De Circulo Physico, Quadrato* (1616), as well as with his *Atalanta Fugiens* (1617; 1618). Nonetheless, by the time the "Microcosm" (1621) was composed, Fludd had become preoccupied with the cabbalistic system, which remained as his over-whelming interest through-out his subsequent writings. In these, he also referred to Dee's cabbalistic mathematical theories and optical geometry, although without mentioning him by name, using only his term, "mathesis" from the *Mathematicall Preface* and interpreting the "Monas" cabbalistically in the same section.¹¹ There were more direct lines of contact between Fludd and Dee since one of his most important English patrons was John Selden who had purchased items from Dee's library,¹² while another was Sir Robert Bruce Cotton who had received Dee at his home.¹³

In Fludd's medical theories, the divine force of light was related to the Paracelsian aerial nitre, or quintessence, stating, for example, in the *Tractatus Theologo-philosophicus* (1617) that the tabernacle of the aerial spirit was

⁹ Fludd, *UCH*, 1 (1617), p. 21, with illustration; see also p. 165.

¹⁰ For example, see Paracelsus' account in Sudhoff, 13, *Philosophia ad Athenienses*, pp. 393, 420-1.

¹¹ Robert Fludd, *Medicina Catholica*, 1 (Frankfurt: William Fitzer, 1629), pp. 1-4.

¹² Huffman (1988), pp. 25ff. For John Selden see *Dictionary of National Biography*, 17, pp. 1150 ff.

¹³ Huffman (1988), pp. 25ff. See *DNB*, 4, p. 1233-34.

the sun.¹⁴ All living creatures, he explained, required air since this contained the aetherial spirit whose essence was the celestial light. It was breathed in by the lungs and carried to the heart, where it was separated from the air and dispersed as the vital spirit through-out the body.¹⁵ Moreover, Fludd used the rays of the sun in his own practical alchemical work, as is recorded in the manuscript version of his treatise on wheat, the "Tractatus de Tritico" which re-appeared in the *Anatomiae Amphitheatrum* (Frankfurt: J. T. de Bry, 1623) and also in the *Philosophia Moysaica* (Gouda: Petrus Rammazenus, 1638).¹⁶ In this text Fludd described the distillation of the spirit of wheat, whose virtues corresponded to those of the sun and gold. He noted that the first substance produced in the course of distillation was a white liquid, which, placed in the open air, turned red in the rays of the sun. Fludd claimed that, due to the fiery nitre in the solar rays, his chemicals had become the universal panacea, whose generative celestial fire had been drawn out of the sun and concentrated by his prepared spirit (the white liquid).¹⁷

Fludd's concepts of the creative forces of light were illustrated by diagrams, whose forms originated in medieval optics (figs. 2, 11), the principles of light and darkness being represented by two intersecting cones, or pyramids. The base of the "pyramidis formalis" was placed in the Empyreum of God, signifying the emanating rays of divine light, while the base of the "pyramidis materialis" was located on the earth with its apex in God, depicting the aspiration of the universe to its divine source (fig. 44). Consequently, the optical geneology of Fludd's intersecting cones produced an image of God and his created universe as being perpetually locked in a mutual gaze. Within the lozenge shape created by the intersection of the emanatory and reversionary cones, Fludd placed the sun, since the nature of this sphere balanced the oppositions of spirit and matter, male and female, sulphur and mercury.¹⁸

¹⁴ Allen G. Debus (ed), *Robert Fludd and the Philosophicall Key* (New York: Science History Publications, 1979), pp. 125-26.

¹⁵ Josten, "Robert Fludd's 'Philosophicall Key'" (1963): 19. See also Debus, *Robert Fludd and the Philosophicall Key* (1979), pp. 125-26.

¹⁶ This is discussed in Josten, "Robert Fludd's 'Philosophicall Key'" (1963): 1-23 and also in Debus, *Robert Fludd and the Philosophicall Key* (1979), passim. The *Philosophia Moysaica* was republished in an English version as the *Mosaicall Philosophy* (London: H. Moseley, 1659).

¹⁷ Debus (1979), ff. 83r-108v.

¹⁸ Fludd, *UCH*, 1 (1617), Tract I, p. 165: "sphaera aequalitatis, amplexus inter masculinum et foeminam universalis, veri chymicorum sulphuris et Mercurii partio debita et proportionata: ex quorum coitu infans solaris, mundi decus, veridique eisdem anima, ortus est: Unde verissime animae sphaera dicitur. Hec igitur est ratio solaris in medietate coeli positionis et situs ac sustentationes". See also Fludd, *UCH*, 1 (1617), Tract I, p. 167:

Fludd described these diagrammatic forms as "pyramides lucis", cones of light,¹⁹ claiming that he had invented the reversed cone of light, the "pyramidis materialis",²⁰ an assertion not entirely justified since these intersecting diagrammatic structures already existed in optical treatises, although this was their first use in the context of a pictorial cosmogenesis.²¹ Dee had produced a set of comparable diagrams in *De Speculis Comburentibus* (British Library MS Cotton Vitellius C. VII) (figs. 12-15). Moreover, the optical radial cone, with its base in the eye of the viewer, had already been adapted by Alberti to a pictorial context in his "perspectiva artificialis". Thus, Fludd's cones of emanation and reversion shared the same conceptual source with Alberti's perspective.

In the "Macrocosm" (*UCH*, 1617) Fludd's cosmogony was additionally based on the three Paracelsian generative principles, those of light, darkness and water, from which emerged the three primary elements, Salt from darkness (as the "prima materia"), Sulphur from light (as the soul) and Mercury from water (as the spirit). These, in turn, produced the four qualities of hot, cold, dry and moist. Fludd's chemical cosmogenesis was explained by a series of geometrical diagrams in which the principles of light and darkness operated in a mutually antagonistic duality.²²

Yet, although Fludd's text and visual imagery described cosmic processes of an indescribable magnitude and grandeur, he proved the validity of his account by means of some very simple and practical chemical processes. For example, in one engraving the sun is shown radiating its light onto a vessel, from which a pipe runs into a spherical container (*UCH*, 1, 1617: 31) (fig. 45). The vessel contains a mix of oil and water which are distilled by the solar rays. Fludd uses this chemical experiment to reinforce his point that, in the absence of light, the universe would revert to the primal darkness of "hyle", since it is light which gives form to prime matter. He compared his experiment to God's work on the

"Imo haec Triangulorum interfectio est verissime cordis Macrocosmi sedes, in quo omnia ad pondus sunt temperata: non enim praedominatur materia, non etiam nimis insultat forma, nisi in eo, quod splendorem et completum ac perfectum appetitum materiae exsatiat; Haec est vera mundana unitas ex dualitate conflata".

¹⁹ Fludd, "Macrocosm", *UCH*, 1 (1617), Tract I, p. 84.

²⁰ Fludd, "Microcosm", *UCH*, 2 (1619), Tract. I, p. 180.

²¹ For example, see John Pecham's 14th-C diagrams as reconstructed by Lindberg in Lindberg, *John Pecham. Perspectiva Communis* (1970), pp. 77, 99: figs. 4, 5.

²² See Fludd, "Macrocosm", *UCH*, 1 (1617), Tract I, pp. 9ff, see, in particular, pp. 16-31. One of the illustrations depicts a square which contains a dark shadow in its midst, inscribed with the words "et sic in infinitum". The text concerns the "caput corvii" (the putrefying alchemical material). The following illustration (p. 29) depicts light in the form of the sun breaking through the midst of darkness. The succeeding image illustrates the chemical processes activated by the sun's rays.

fourth day of the creation (*UCH*, 1, 1617: 30).²³ To his chemical account of *Genesis*, 1, also belongs the illustration of the dove of the Holy Spirit emerging from the "Word" of God, "Fiat" (the Second Person of the Trinity) to blaze a trail of light around Chaos (*UCH*, 1, 1617: 49). Later in the treatise, Fludd describes the rays of the word, "Fiat", as carrying God's form and image to the very centre of the cosmos.²⁴

In the third book of the "Macrocosm" Fludd offered another interpretation of the cosmic structure, complementing his earlier chemical visualisations, but expressed musically in his analysis of the "Musica Mundana", the macrocosmic Pythagorean tonal ratios (*UCH*, 1, 1617: 79-81).²⁵ His musical universe was still a Paracelsian construct, nonetheless, since the empyreal heaven was stated to be composed of aethereal fire, whose light generated the material forms in accordance with the mathematical ratios of the Pythagorean monochord.²⁶ Since the light of the "anima mundi" pervaded the cosmic monochord, hence it was the equivalent of the formal and material pyramids of light.²⁷ The fifth chapter of the "Musica Mundana" included an illustration of the cosmic lyre, probably modelled on Dee's reference to this idea in the *Propaedeumata Aphoristica* (*UCH*, 1, 1617, Tract I: 92).²⁸

Cabbalism is engaged by Fludd for the first time in the "Microcosm" (*UCH*, 2, 1619-21), although this treatise is less directly related to alchemy. Reuchlin in *De Arte Cabbalistica* had discussed the similarities between

²³ In Fludd's "Macrocosm", *UCH*, 1 (1617), Tract I, pp. 32-33 another chemical experiment is depicted demonstrating the force of the sun's heat. In this picture, at the top right, there appears a cube. Beneath it stands an alembic from which runs a pipe into the base of the cube and another pipe leads into a beaker. The third image in this sequence shows yet another experiment with heat in which an alembic is placed into an oven. The text states that this work concerns the sublimation of air. See also *UCH*, 1, pp. 37-43, where Fludd discusses the creation of the elements and composites. An illustration of Chaos is followed by a picture of the sun arising in its midst to generate the four elements.

²⁴ Fludd, *UCH*, 1, 1617, Tract I, p. 165: "At cum secum de mundi creatione cogitasset, dixit, FIAT; et protinus vultus ipsius splendor in tenebris reluxit ... eiusque radii, aut potius ipsius Dei species et forma penetravit usque ad machinae ipsius centrum".

²⁵ See Amman (1967), pp. 198-227.

²⁶ Fludd, *UCH*, 1 (1617), Tract I, p. 79: "coelum Empyricum est ignis et lucis supernaturalis domici ... ab qua immediate ignis naturalis et mediate alter ille magis accidentaliter progreditur, sic etiam locus eius oppositus, terminans ac finiens motus radiorum eius, sit materiae et tenebrarum receptaculum". Fludd's illustration of the Cosmic Monochord has been discussed extensively in Amman (1967), pp. 198-227. Fludd analyses the structure of the "Temple of Music" in "Tractatus Secundus" of the "Macrocosm" (*UCH*, 1, 1618, pp. 168-17) and he provides an illustration (p. 161).

²⁷ Fludd, *UCH*, 1 (1617), Tract I, p. 80: "Auctor autem in hac musica existit mundi anima seu lux essentialis".

²⁸ See Schumaker, Aphorism XI, pp. 126-27.

the Pythagorean and the cabbalistic systems, calling Pythagoras the father of cabbalism.²⁹ Hence, this aspect may have been implicit in Fludd's earlier Pythagorean discourse, although it is more likely that during his continental travels in 1598-1604/5 he had encountered the cabbalistic alchemy of Khunrath by which time the "Macrocosm" had already been written. In the "Microcosm", from the outset, Fludd takes up the theme of the generative vision of God, providing an illustration of the qualities of the Holy Trinity (fig. 47) in which the eye of God appears in the hierarchical position, while the central space is occupied by sun.³⁰ The various constituents of the eye represent the Three Persons of the Holy Trinity.³¹ The lower level of this picture shows dramatic clouds shooting a thunder-bolt at the earth, thereby representing God the Father in the form of consuming fire (*UCH*, 2, 1619: 26-27). This, Fludd explains, is the manner in which Moses and the Israelites saw the face of God, while they heard his word like the sound of thunder.³² He diversifies his account of the Trinity by employing Pythagorean musical ratios to demonstrate the harmony within its essential nature, returning also to his earlier discourse on the formal and material pyramids of light (*UCH*, 2, 1619: 41-45). A new illustration relates these diagrams to the cosmic body of Anthropos (fig. 44), stating that the "pyramidis formalis" is nothing less than the efflux of light from God to the natural world.³³ Divine light is the primary root of the "musica mundana", since nature acquires its forms from the divine emanation of number and ratio according to the structure of the Pythagorean monochord.³⁴

Fludd analyses the Pythagorean harmonies within the proportional relations of soul, spirit and body, comparing the physical body to the

²⁹ Reuchlin, *De Arte Cabbalistica* (Stuttgart, 1964, facs of 1517 ed), ff. xxii- xlviii (pp. 156-206).

³⁰ Fludd, *UCH*, 2 (1619), Tract I, p. 26, illustration on p. 27.

³¹ Fludd, *UCH*, 2 (1619), Tract I, p. 26: "Oculo comparari et declarari potest multiplex sacrosanctae et supersubstantialis essentiae proprietates. Albedo enim oculi Patri referri potest, quatenus ex ea cornea sphaera atque uvea ... procedunt: Nam Filius ... sphaerae corneae assimilatur; et Spiritus ... uvae refertur, quae in centro est corneae, ut illa in centro albedinis utrosque orbes comprehenderit".

³² Fludd, *UCH*, 2 (1619), Tract I, p. 26: "Vel etiam eruptioni nubis conferre liceat in tonitru factae, in qua Deus Pater videtur in similitudine ignis consumentis apparere. Sic a Moyse et Isrealitis visus est Jehova ineffabili vultu: Vox autem seu crepitus in tonitru verbo Dei assimilatur".

³³ Fludd, *UCH*, 2 (1619), Tract I, p. 81: "pyramidis formalis nihil aliud sit, quam effluxus seu emanatio lucis sive fulgoris, a fulgido Dei solis: sive rutilo essentiae supersubstantialis mundo, deorsum tendens in mundum substantialem".

³⁴ Fludd, *UCH*, 2 (1619), Tract I, p. 250: "Lux vero summa supersubstantialis est quasi primaria musicae mundanae radix".

Pythagorean quaternary, which is illustrated in the form of a cube (fig. 48). When folded or unfolded as if made of paper, the cube represents the evolution and involution of the universe according to its governance by divine number and ratio. Within its structural relations of volume, plane and line, the cube contains the modes whereby the four elements are generated and transmuted (*UCH*, 2, 1619, Tract I, Sect I: 250-51).

In the second volume of the "Microcosm" (Frankfurt: J. T. de Bry, 1621) Fludd introduces the cabbalistic system, basing most of his argument on Reuchlin,³⁵ but occasionally revealing the additional influence of Khunrath. The frontispiece to this volume was clearly inspired by de Vries' praying alchemist in the *Amphiteatrum*, since Fludd's magus also prays before an emblem of the Tetragrammaton, borne within the divine eye of God and bedecked with wings. It is enveloped by a cloud, forming an enclosure conceptually related to de Vries' depiction of the tabernacle-tent. Fludd seemed to empathise with this image since he returned to the motif of the praying alchemist on several other occasions. A motto, ostensibly attributed to *Psalm* 63, is inscribed on Fludd's frontispiece, referring to the protective wings of God, "In alarum tuarum umbra caram", recalling the concluding line of the Rosicrucian *Fama Fraternitatis*, "sub umbra alarum tuarum Jehova".

It is well-known that a similar axiom was used in the heraldic emblem of the Andreae family, derived from *Psalm* 17: 8, "sub umbra alarum tuarum protege me".³⁶ The family insignia consisted of a cross and a rose which had also been one of Luther's emblems. While Khunrath never used such a symbol in his illustrations, Maier employed the image of the rose on at least one occasion³⁷ and Fludd similarly depicted a rose, with honey-bees, on the title-page of his *Clavis Philosophiae* (1633) which was his response to Mersenne. Thus, it seems, that by 1621 Khunrath's *Amphiteatrum* was thoroughly established within the Rosicrucian canon, with de Vries' image of the praying alchemist being used as a common Rosicrucian emblem. For example, there are references to the original picture in Johann Daniel Mylius' *Opus Medico-Chymicum* (Frankfurt: Luca Jennis, 1618) in an image representing Oswald Croll, as well as in one depicting Mylius himself, both shown kneeling before the light of God in their studies. These tiny images also contain a table and a musical instru-

ment, as well as alchemical vessels and shelves of books, as in de Vries' engraving. A less obvious reference to the original picture occurs on the frontispiece of Theophilus Schweighardt's *Speculum Sopicum Rhodo-Stauroticum* (1618) in which both an alchemist and a forge-smith kneel before the winged Tetragrammaton, above whom is placed the motto "sub umbra alarum tuarum".³⁸

Fludd explains the descent of the Tetragrammaton in the form of divine light to create the material light of nature in a cabbalistic exegesis of the *Book of Genesis* (*UCH*, 2, 1621: 2-74). Although the discourse is not immediately related to alchemy, this is implicit in his subsequent discussion of medical issues and meteorology. Fludd commences his cabbalistic account with an examination of the principles of "gematria", mentioning Reuchlin in this context.³⁹ He also begins to employ the name of Christ, as the Second Person of the Trinity (*UCH*, 2 1621: 2-5), relating him to the angel Metatron who is stated to be the "anima mundi", or Anthropos (*UCH*, 2 1621, Tract II, Sect I: 8-9).⁴⁰ Fludd equates the First Person (God the Father) with the first Hebrew letter of the Tetragrammaton, "Jod" (*UCH*, 2 1621: 8), the different levels of creation arising from the constituent letters of the Tetragrammaton, "Jod He Vau He". Fludd associates the New Testament "Word" (as in the gospel account of John the Evangelist) with the "Son" of God who is both the Messiah and the archangel Metatron, an identification said to be proved by Fludd's analysis of the name of Jesus which appears as "J. H. U. H" in his transcription of the Tetragrammaton.⁴¹ According to Fludd, the face of Metatron is composed of the rays of the sun (*UCH*, 2 1621: 36-47).⁴²

Fludd states that "Hochmah" (Wisdom) is the "Verbum" (Word), who is the Second Person of the Trinity (Christ) and also the first letter of the Hebrew alphabet, "Aleph". In his statement that the Messiah is the most potent medicine for all human ills, both spiritual and corporeal, Fludd may be relying on Khunrath's account of Christ as the universal

³⁸ Yates (1986), p. 55, fig. 15a.

³⁹ Compare with Reuchlin, *De Arte Cabbalistica* (Stuttgart, 1964, facs. of 1517 ed.), pp. 193ff.

⁴⁰ See Reuchlin, *De Verbo Mirifico* (Stuttgart, 1964, facs. of 1494 ed.), pp. 95-103 and *De Arte Cabbalistica* (Stuttgart, 1964 facs. of 1517 ed.), pp. 143-55.

⁴¹ Compare with Reuchlin's version, op. cit.

⁴² Pico della Mirandola had been the first to identify the sun with the Messiah in a cabbalistic context, in his *Conclusiones Nongentae*, based on the account of the tabernacle of Metatron in the *Zohar*. See Pico della Mirandola, *Conclusiones Nongentae* (1532 ed), No. 51, p. 160: "Sicut fuit luna plena in Salomone, ita fuit plenus Sol in vero messia, qui fuit Iesus et de correspondentia ad diminutionem in Sedechia potest quis coniectare si profunduit cabala" and also Lachower and Tisby, *Zohar* (1989), pp. 643-45.

³⁵ Specifically the sections in Reuchlin, *De Verbo Mirifico* (Stuttgart, 1964 facs. of 1494 ed.), pp. 95-103 and Reuchlin, *De Arte Cabbalistica* (Stuttgart, 1964 facs. of 1517 ed.), pp. 133, 143-55.

³⁶ Montgomery, pp. 173-74.

³⁷ See McLean (1979), passim.

panacea, the "Magnesia".⁴³ In fact, much of Fludd's theosophy recalls Khunrath's identification of "Hochmah" with Christ, based on Reuchlin's account.⁴⁴ The "Verbum", or Metatron, is the first emanation of God, descending sequentially through the letters comprising the Tetragrammaton to reside in the middle sphere of the heavens, that of the sun.⁴⁵ Fludd, like Khunrath in *De Igne Magorum*, compares "Hochmah" with the light and fire of the Zoroastrians and also with that of Hermes Trismegistus and other "prisca theologians".⁴⁶ Quoting from the scriptures, he explains that God has placed his tabernacle in the sun.⁴⁷ Through the rays of the angel Metatron (the Spirit of Wisdom created prior to all others) the world is illuminated. Therefore, the Word is the purest fire and most beautiful light, the source of all generation, without qualities but mixing with the elements to provide them with their different qualities. This highest light is, moreover, also associated with the archangel Michael, "Sacerdote Magno Michael", and the primal word

⁴³ Later in the treatise, he expounds a medical theory based on the concept of the Messiah Christ as the universal panacea in his forms of the quintessence and Anthropos-Microcosm, see Fludd, *UCH*, 2 (1621), Tract I, p. 21: "Unde scriptum est; venit hominis filius salvare, quod perierat Matth. 18. Quod quidem de Messia exaudiendum est, non quoad ejus corpus, sed respectu virtutis spiritus benignitate pleni; qui est emanatio essentialis et primaria a Jehovah: Hinc Christus, non herbis nec medicamentis Pharmacopaeorum, sed mirifica Tetragrammati virtute non modo per solum contactum, verumetjam et Spiritus sui divini afflatum, ac vocis solius prolatione omnia morborum genera sanavit, hoc est benigna Jehovahae virtute et divino misericordiae afflatu, quo abundabat; imo vero et homines emortuos in vitam, ac pristinum integritatis et sanitatis statum ineffabili suavi et virtute revocavit ac restituit, uti in novo testamentum possim ejus rei documenta et testimonia extant".

⁴⁴ See Reuchlin, *De Verbo Mirifico* (Stuttgart, 1964, facs. of 1494 ed.), pp. 95-103 and *De Arte Cabbalistica* (Stuttgart, 1964, facs. of 1517 ed.), pp. 143-55.

⁴⁵ Fludd, *UCH*, 2 (1621), Tract. 1, pp. 22-28: "haec omnia dona a summa illa sapientia, seu angelo Metatron, seu universali mundi anima, seu prima emanatione a Jod, in mundum influere solent ... [p. 23] ... Ut ergo deus, Aleph tenebrosus, fuit prima unitas extia mundum creatum, et ante ejus creationem, ita etjam prima lucis eius emanatio, per quam Verbum; Messias, seu Virtus Tetragrammati in mundum ingressa est, imo vero quae est ipsum Verbum, quod est ejusdem essentiae cum Aleph, Jod, Jah, Ehieh et Tetragrammato, loquitur: ut itaque Aleph erat prima unitas in mundo Archetypo et ideali, mundi fabricandi figuram delineans".

⁴⁶ Fludd, *UCH*, 2 (1621), Tract I, p. 24: "quod verbum sit in medio, tanquam inter ignem et Spiritum ... hoc Verbum sacrosanctum a centro Jod Patris ... ita et frequenter ambulare solet in sphaera aequalitatis, ubi Spiritus et lux aequali pondere et mensura permiscuntur, seu in ipsius animae centro, quod in centro firmamenti delineatur". On the Zoroastrians and the "prisca theologia" compare with Khunrath, *De Igne Magorum*, pp. 4-20.

⁴⁷ The original cabbalistic version of this idea may be found in Lachower and Tisby, *Zohar* (1989), pp. 643-45.

of creation, "FIAT", is yet another form of Metatron. The "Word" (Christ), Fludd concludes, is "Vau", the third letter of the Tetragrammaton who is the clearest and most lucid Spirit ("Spiritus limpidissimus ac lucidissimus") (*UCH*, 2 1621: 26).⁴⁸

On this cabbalistic foundation Fludd accounts for the qualities of the sun which is unique in being the father of light, the tabernacle of Christ, the Word and Apollo. It takes care of the mortal sphere and heals all earthly sorrows and ills, although the ultimate medicine is God himself, the prince of physicians, who can heal solely through the Word.⁴⁹ Fludd, thus, fervently accepts the visible sun as being the mystic body of Christ.⁵⁰

He also provides an analysis of the Hebrew letter "Shin", signifying fire, the "azoth", as well as the Holy Spirit (*UCH*, 2 1621: 28-33). This had been the central trope in Reuchlin's transposition of the cabbalah into a Christian context.⁵¹ In the second book of the treatise, Fludd specifically mentions Reuchlin in his account of the incarnation of Christ as the second Adam, stating that the regeneration of the inner man is through Christ ("hominis interni per Christum regeneratio") (*UCH*, 2 1621: 46-50). His account may be drawn from Khunrath's pietism, since he uses the image of the resurrection of Christ as a metaphor of individual spiritual rebirth.

Fludd also explores the cabbalah in another treatise, the *Philosophia Sacra et vere Christiana seu Meteorologica Cosmica* (Frankfurt: J. T. de Bry, 1626) whose frontispiece displays the archangel Michael in the act of slaying a dragon. The angel's head takes the form of the glowing orb of the sun, while another three suns (the Paracelsian principles) and a rainbow (God's covenant with mankind) are illustrated in the background. The treatise employs Paracelsian elemental theory and Pythagorean geometry, as well as the cabbalistic thesis of Christ as Metatron. One of the

⁴⁸ Fludd, *UCH*, 2 (1621), Tract I, p. 25: "hoc Verbum sit ignis purissima, seu lux pulcherrima ... Physici Ethnici [dixerunt] ... hanc ipsam naturam esse lucem seu ignem invisibilem, a quo cuncta sint genita". Fludd's source for these concepts is found in Reuchlin's *De Arte Cabbalistica*, where he had associated the Messiah with the pure light of God, as well as with the letter "Vau". For Reuchlin see Busi and Campanini (eds and trans), *Reuchlin. L'Arte Cabbalistica* (1995), pp. 39, 212-13.

⁴⁹ Fludd, *UCH*, 2 (1621), Tract I, p. 27: "nonne medicinae Deus, atque medicorum princeps, cum ipse per se solum, absque herbis aut aliis pharmacis, solo suo sermone, et Spiritus sui divinitate, omnes credentes ... curaverit ... Atque hinc est, quod Christus, et Verbum, et Apollo, quamvis sit in hac mundo, similiterque eius tabernaculum".

⁵⁰ Fludd, *UCH*, 2 (1621), Tract I, p. 27: "me solem visibilem pro ipso corpore Christi mystico accipere".

⁵¹ Reuchlin, *De Verbo Mirifico* (Stuttgart, 1964, facs. of 1494 ed.), pp. 95-103 and *De Arte Cabbalistica* (Stuttgart, 1964, facs. of 1517 ed.), pp. 143-55.

new images is a somewhat novel and ungainly catoptrical conceit, incorporating a radiant sun, drawn with a face whose nose consists of the equilateral triangle of the Holy Trinity. It directs the rays of its solar virtues onto a star, which reflects them to a wind-god, who, in turn, blows them down to the earth (Fludd, 1626: 189) (fig. 49). This picture may have originated in Balthasar Schwan's engraving for Maier's *Septimana Philosophica* in which the rays of the sun are catoptrically reflected by the mirror of the moon (fig. 37).

Fludd also employed the cabbalah extensively in his *Philosophia Moysaica* (1638) whose complete title states that Christ is the philosopher's stone. Since this treatise was a reply to Mersenne's attacks on his scientific ideas, Fludd may have been taking recourse to a more developed Christology, on the model of Khunrath, as a way of placing his ideas in a religious context out of the reach of such empiricist objections. The equating of Christ with the philosopher's stone had first appeared in Fludd's *Clavis Philosophiae* (Frankfurt: William Fitzer, 1633) in which he explained, in Rosicrucian terminology, that the rose holds the secret to the philosopher's stone which is Christ.

A work, located between the composition of the *Utriusque Cosmi ... Historia* and the late, more Christological, treatises are the two volumes of the *Medicina Catholica* (1629-31) which translate Fludd's cabbalistic alchemy of light into a practical medical context.⁵² Fludd's ontology in this treatise hovers on the edge of heresy, very nearly transgressing the Augustinian doctrine of God as the absolute good.⁵³ One of Fludd's engravings (appearing in both volumes of the *Medicina Catholica*) depicts God in the aspects of both light and darkness, good and evil (fig. 50). Initially, Fludd mitigates the irregularity of this concept by recourse to classical mythology, referring to the apollonian and dionysian aspects of God, but then he proceeds to reinforce his unconventional position by stating that, since "volunté" and "nolunté" (will and negation) are both in God, therefore, both must be "good".

Nonetheless, Fludd wisely reduces the impact of this statement by citing the biblical texts of *Job* and *Deuteronomy* in which God is described as the giver of both health and sickness. Fludd explains that God has a

⁵² For a sample of Fludd's chemistry in a practical context see Debus, "Renaissance Chemistry and the Work of Robert Fludd", *Ambix* (1967): 42-59 and also Sherwood-Taylor, "The Origin of the Thermometer", *Annals of Science* (1942): 129-56, as well as Allen G. Debus, "Key to Two Worlds: Robert Fludd's Weather-Glass", *Annali dell'Istituto & Museo di Storia della Scienza di Firenze VII* (1982): 109-44.

⁵³ For an outline of this issue see Copleston, pp. 52ff.

⁵⁴ Fludd, *Medicina Catholica*, 1 (1629), p. 4: "Deus scilicet, et Noctem, Lucem et Tenebras, Bonum et Malum. Denique eos varia vitae et mortuus statuimus mundi unius

single nature which is able to mutate into the dispositions of both light and darkness.⁵⁴ In the *Zohar* there is a similar account of the manner in which the principles of light and darkness emerge from the left and right branches of the Tree of Life, entwined together in a mutually generative act.

One came out of the other, for from goodness evil emerged, and from Mercy Judgement emerged, and one was entirely contained in the other: the good inclination and the evil inclination, right and left ... white and black.⁵⁵

Moreover, in an earlier section, Fludd had already explained the nature of the divine Monad (Fludd, 1629: 1-2) as being the most sacrosanct light, God in his purest nature prior to manifestation, in whom there was no trace of darkness. The Monad cannot be grasped by human consciousness, he states, since it is "non-Ens" when its rays are folded around itself. Cabbalists identify the primal Monas with the darkness of "Aleph", but when it opens its rays it becomes "Aleph lucidum", the "Excellentia Sol luculentius".⁵⁶

Both Maier and Fludd generated a succession of disciples, but their closest follower was a contemporary, Johann Daniel Mylius, who appropriated the design of Fludd's illustrations in the "Macrocosm" (1617) for his *Opus Medico-Chymicum* (1618), while in his *Philosophia Reformata* (Frankfurt: Luca Jennis, 1622) he produced almost exact reproductions of Maier's emblems in the *Atalanta Fugiens*.

An extraordinary development of Fludd's cosmology of the divine eye of God was produced by the illustrator to Jacob Boehme's collected works in the Amsterdam edition of 1682 published by Gichtel nearly sixty years after his death. The date of these images falls outside the limits

Tabernacula. Quorum unum, Deum se de unica natura in aliam secundum Lucis et Tenebrarum dispositionem mutatum, Principem, cum dictis Partis effinximus". In the 1631 volume of the *Integrum Morborum sive Medicina Catholica* much the same argument is found on pp. 17-32.

⁵⁵ Lachower and Tisby, *Zohar* (1989), 2, p. 490.

⁵⁶ Fludd, *Medicina Catholica*, pp. 1-2: "Haec ergo duo invenuerunt in Mathesi sapientiores tam Numerorum quam Dimensionum omnium Principia, ordine dignissima et diuturnitate antiquissima, ad imitationem sive imaginem interni et centralissimi Divinitatis pureti, seu Monadi Sancrosanctae lucidae, in qua non sunt tenebrae ullae, in seipsam ante Mundi creationem contractae atque occultatae, et in absoluta sua Unitate et Simplicitate permanentis ... ut Monas ista Imperatoria omnem existentiam sua manifestatione, seu dilatatione ac radiorum emissionem, amplectitur, detegit, creat, et efformat: ita quidem extra istam existentiam nihil, ut et extra nihil sincera est haec Unitas. Quare ex istis incomprehensibilis et infinita Naturae istius declarari videtur, quae Excellentia Sole luculentiuscum sit Unum, omnia tamen potest ... viri Cabalae peritiores, monadem sine unitatem istam primordiale in abstrusa et occulta sua dispositione Aleph dixerunt tenebrosum".

of the present study, but they cannot entirely be omitted since their original qualities merit due recognition on the part of the scholar. In Boehme's pietism, the cabbalistic Christ was a metaphor for his own spiritual experience and he adapted alchemical motifs to his deeply individual monistic "gnosis".⁵⁷ His maxim was adopted from the Paracelsian precept, "solve et coagula" and, like Fludd, he considered light and darkness to be two aspects of the one God. Both theosophists probably drew on the original account of this concept in the *Zohar*, but Boehme's account was also influenced by Lurianic cabbalism.⁵⁸ For him, the purpose of cosmic and human existence was to balance the oppositions within internal and external nature and to unite them with the Eternal Light.⁵⁹

Gichtels' mystical emblems signify the spiritual alchemy initiated by the inner inspiration of the Word, Christ and the dawning of the light brought by his incarnation within the individual soul. A frequent symbol in these images is that of the eye of God, sometimes profusely inscribed on the "wheels" of the Ezekiel's Chariot (the cabbalistic "Merkebah").⁶⁰ Gichtel inter-related Ezekiel's symbols into those of Christian iconography, such as the dove of the Holy Spirit, the sacred name and form of Christ, the emblem of the sacred heart, the equilateral triangle of the Holy Trinity and a profusion of the eyes of God, often containing the Tetragrammaton. These are set within the aurora of the divine light of the Son of God who in Boehme's *Aurora* (1612) replenished the world after its corruption by the fall of Lucifer from grace.

The emblems take the signficatory form of hieroglyphs, similar to the devices employed in Renaissance emblem-books of the sixteenth century, which were a visual translation of a literary maxim.⁶¹ Gichtel, however, went beyond the succinct models of the previous century by engaging a broader topographic spread in his design, as well as a more dramatic and expressionistic style of drawing. According to Geissmar, who has investi-

⁵⁷ Christoph Geissmar, *Das Auge Gottes Bilder zu Jakob Boehme* (Wolfenbuttel Arbeiten zur Barockforschung, 23) (Wiesbaden: Herzog August Bibliothek, 1993), see figs. 179, 182, 187, 188.

⁵⁸ Frick, *Die Erleuchteten* (1973), pp. 124-28; Weeks, *Jacob Boehme* (1991), pp. 93-126; Eberhard H. Paltz, "Zum Verstandnis von Jacob Boehmes Autorschaft" in *Pietismus und Neuzeit* (1975): 9-21.

⁵⁹ Peuckert (ed), *Jacob Boehme. Samtliche Schriften* (1955), 1, pp. 187-206, 263-84; Alexandre Koyre, *La Philosophie de Jacob Boehme* (Paris: Vrin, 1979), pp. 281 ff; Victor Weiss, *Die Gnosis Jakob Boehmes* (Zurich: Origo, 1955), passim.

⁶⁰ See the account of the "Merkebah" in the *Zohar* in Lachower and Tisby, *Zohar* (1989), pp. 587-621.

⁶¹ Giehlow, "Die Hieroglyphenkunde des Humanismus in der Allegorie der Renaissance" in *Jahrbuch der Kunsthistorisches Sammlungen der Allerhochsten Kaiserhauses*, 32 (1915); 1-232.

gated the sources of these illustrations, some of Fludd's cosmological diagrams had a significant import for the development of these illustrations, but Geissmar has not analysed the reasons for the formal differences between the 1682 emblems and their historical predecessors.⁶² Gichtel's cycle of imagery, in fact, for all its powerful emotional impact, is more like a catalogue of icons, rather than a theatrical scene in the manner of Khunrath's, Michelspacher's, or Maier's illustrations. In several respects, the 1682 illustrations are moving away from their original sources in the pietistic alchemical imagery of the late sixteenth and early seventeenth centuries, anticipating instead the far less sophisticated masonic "tracing boards" of the eighteenth century.⁶³ These masonic pictures were used for training a group of initiates in the principles of the craft, being designed for communal use rather than for private contemplation. In Szonyi's terms, they were didactic, rather than revelatory images. Consequently, the individual items in the picture needed to be clearly delineated in order to facilitate the process of instruction by the teacher, who would provide an accompanying oral explanation. Gichtel's engravings have the some of the same quality of devices intended to facilitate public instruction.

It is misleading, however, to discuss alchemical illustration without contextualising it within the relevant social and political milieu and since this is not possible within the scope of the present study, these issues will not be pursued at any length. It is relevant, however, to make one further point arising from this brief visual analysis of the semiotic function of Gichtel's engravings, which is that they demonstrate the popularisation, within a generation, of alchemical imagery previously associated with German pietism. In this process, Fludd's illustrations had played a large role, due to his voluminous output in very large print-runs, reusing many of the same cosmological diagrams through-out his series of works, as well as seeing them copied by other artists. Moreover, Fludd's pictures lent themselves to public instruction, as was his intention, since they could operate at several different semiotic levels, not only as revelatory icons, but also as succinct metaphors which could be subjected to oral discussion. In contrast, Khunrath's 1595 visionary imagery almost over-

⁶² Geissmar, *Das Auge Gottes Bilder zu Jakob Boehme* (Wolfenbuttel Arbeiten zur Barockforschung, 23) (Wiesbaden: Herzog August Bibliothek, 1993), see figs. 179, 182, 187, 188.

⁶³ Some excellent examples of masonic boards are illustrated in W. Kirk MacNulty, *Freemasonry* (London: Thames and Hudson, 1991), pp. 48-49. See also Arthur Edward Waite, *Emblematic Freemasonry* (London: W. Rider, 1925), passim and Colin Dyer, *Symbolism in Craft Freemasonry* (London, 1976), passim. An authoritative account of freemasonry is Frick, *Die Erleuchteten* (1973), pp. 164 ff.

whelms the viewer, being intended to by-pass the discursive intellect in order to project him directly into the spiritual presence of God within his own soul. Although Khunrath's subsequent engravings in 1602 were intended to be a public polemic, they employed the rhetorical devices of the theatre which similarly aimed to elude the discriminating faculties of the mind. In comparison with Khunrath's visual strategies, those of the masonic teaching boards were a list of the constituent parts of a creed that had to be memorised in order to gain acceptance into a social elite, rather than being a visual account of a deeply-intuited spiritual experience. In these historical developments of the use of pietistic imagey, Gichtel's have reached a mid-point in which, although he is describing a personal spiritual evolution under Boehme's influence, his pictorial symbols by this date already belonged to a public stock of theosophical emblems.

CONCLUSION

In the sixteenth and early seventeenth centuries, the alchemical references to the celestial spheres and the light of the sun as the agents of God's will involved one fundamental issue. Where was divinity located, within, or without, the human soul and in what manner could the alchemist align himself with that infinite source of power in order to command human affairs? Paracelsus had offered, what appeared to be, the surest resolution to the conflict between an authoritarian external deity and the individual impulses of its subject by positing a cosmic order in which each unit formed a part of the astral body of the demi-urge Anthropos. In this theosophical model, the alchemist through his empathetic understanding of the heavenly spheres could, simultaneously, affect the course of the physical world.

Paracelsian alchemy, thus, muted the distinction between physical and psychic chemistry. Amplified by the luministic cosmogenesis of the cabalah, in Dee's theories in the 1560s an image of the magus began to emerge whose intellectual light mirrored, not only that of the stars and the sun, but of God's own radiance. In a separate development, Weigel appropriated Paracelsian theosophy to make the same point, phrased in Christian terms, in which Christ became the essential light of the soul, the real nature of each human-being, with the consequence that spiritual wisdom became an innate human faculty, rather than the gift of the Lutheran sacraments. Khunrath merged Dee's image of the illuminated magus with Weigel's alchemical Christ to create an "alchemy of light" which, henceforward, prioritised the inner transformation of the alchemist above that of his chemicals.

In the history of alchemy, perhaps the most important change in its central concepts occurs in the period from the late 1550s to the early 1600s in which appeared Dee's and Khunrath's Paracelsian treatises on the use of astral magic and light-rays in the alchemical process. The interesting aspect of their work is that they were still advocating practical work, as well as contemplative practices involving visual imagery. This is an important point which modern scholarship, influenced by nineteenth century theosophy and Jungian psychology, tends to under-estimate. Most of the authors who have written popularised interpretations of Renaissance alchemical illustration have rarely bothered to read the dense accompanying texts, still less have they attempted to place the visual images in any historical context. Whereas it is true, as previously de-

scribed, that the pictures were becoming transmuting philosopher's stones in their own right, nevertheless, alchemists such as Dee, Khunrath, Maier and Fludd still involved themselves in practical work. In this, they were, admittedly, seeking a short-cut, setting-up their mirrors and lenses in order to trap God's own divine virtues in their chemicals, through the rays from the stars, a task more suited to their refined image of themselves as philosophers, than the grimy baking and boiling of the medieval alchemists. Even so, their texts reveal that they knew their chemistry and that each specific symbol and phrase represented, as in Fludd's writings, not only a "spiritual" process, but, usually, a practical equivalent.

Historians of chemistry are well-aware of the continuation of practical alchemy into the eighteenth century, the example of Newton's work being only the most famous, but, on the other hand, they have tended to disregard the visual imagery as if this were mere decoration. Hence, between the extremes of the twentieth century theosophists who will not read the texts and the historians of science who will not read the visual imagery, the "alchemy of light" has diminished in significance, since only the study of both the visual and the literary documentation, as well as knowledge of its political context, can reveal the considerable importance of this alchemical concept in the late Renaissance.

The present work has taken an extended historical view of the evolution of Paracelsian astral and solar theurgy and its deployment by German theosophists in the late sixteenth century, as well as by some of their Rosicrucian followers. Such a lengthy over-view has necessitated too brief a mention of much important contextual history, nor has it been possible to provide an extensive analysis of specific theories. Further study is required to validate many of the suggestions concerning cross-influences and contradictions between the circles of the sixteenth century pietists and hermeticists. Some of this will be possible only when the substantial writings of alchemists, such as Khunrath and Fludd, are provided with a definitive study, followed by modern editions of their works. Moreover, there remains archival work to be undertaken in the hope that manuscript sources will emerge supplying more conclusive evidence about the political affiliations of these alchemists. Above all, it is hoped that future scholars will be prepared to undertake a detailed analysis of the visual illustrations which merit considerably more scrutiny than has been possible in the present study.

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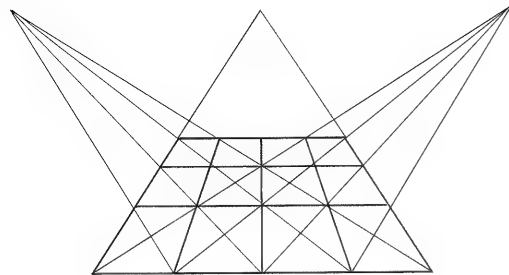


Fig. 1 Diagram of the construction of single-point perspective.
(graphics by Charles Holroyd)

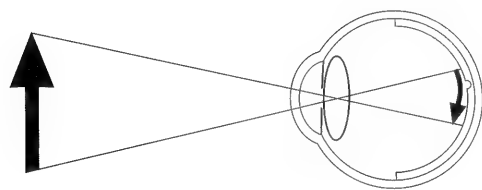


Fig. 2 Diagram of optical rays of light. (graphics by Charles Holroyd)

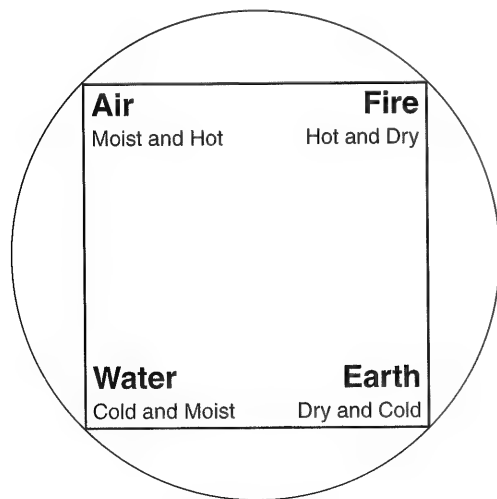


Fig. 3 Diagram of Aristotle's square of the four elements. (graphics by Halina Szulakowska)

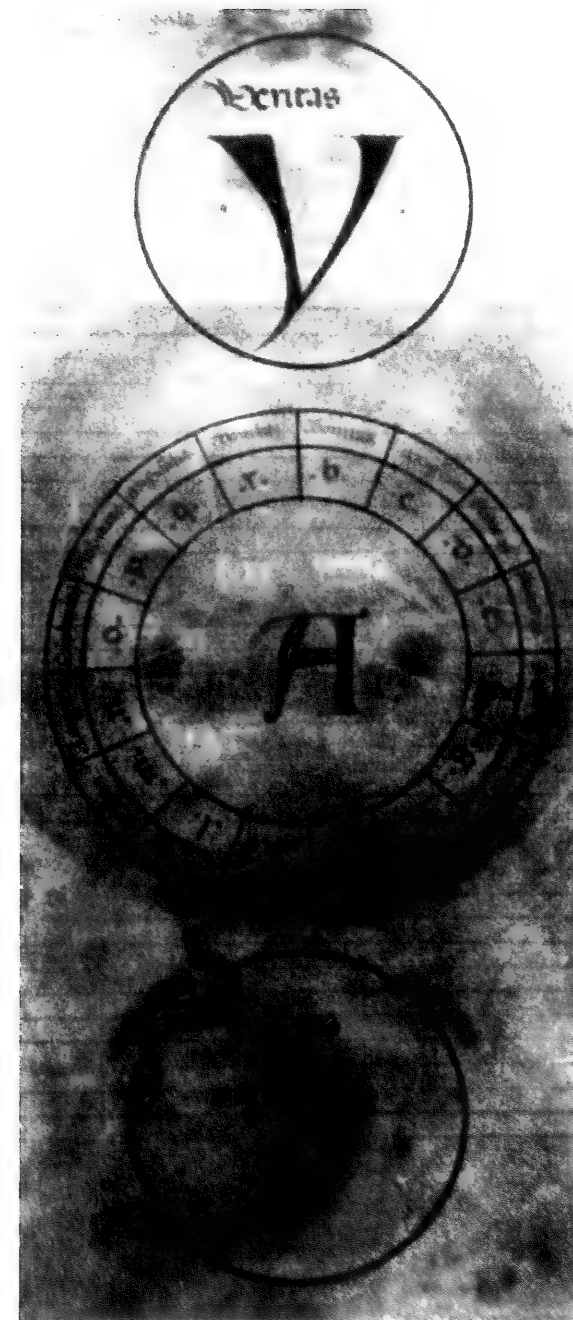


Fig. 4 Lullian "Figura Animae A", Florence Biblioteca Nazionale-Centrale, MS II, iii, 27, f. 113r. (by permission of the Biblioteca Nazionale-Centrale)

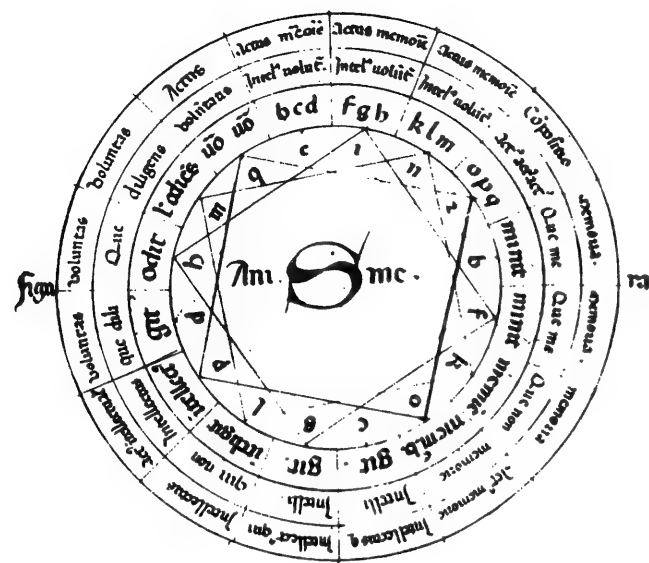


Fig. 5 Pseudo-Lullian "Figura Animae S", Florence Biblioteca Nazionale-Centrale, MS II, iii, 27, f. 229v (co-ordinated by quadrangles). (by permission of the Biblioteca Nazionale-Centrale)

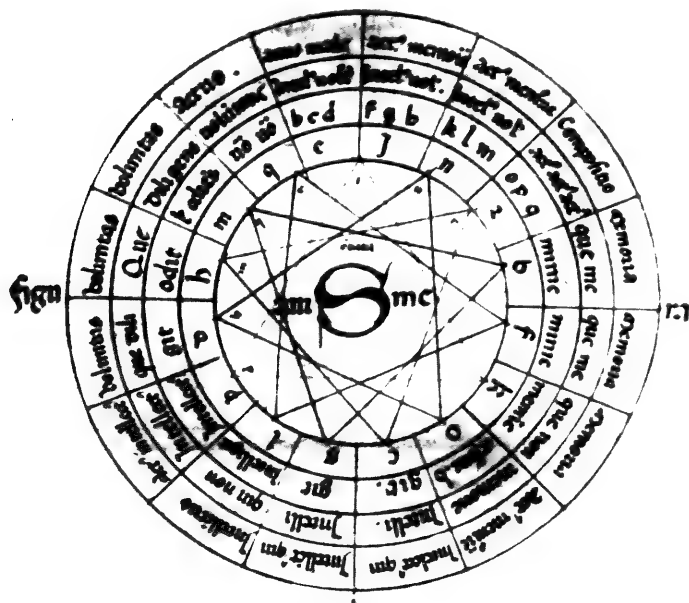


Fig. 6 Pseudo-Lullian "Figura Animae S", Florence Biblioteca Nazionale-Centrale, MS II, iii, 27, f. 247v (co-ordinated by triangles). (by permission of the Biblioteca Nazionale-Centrale)

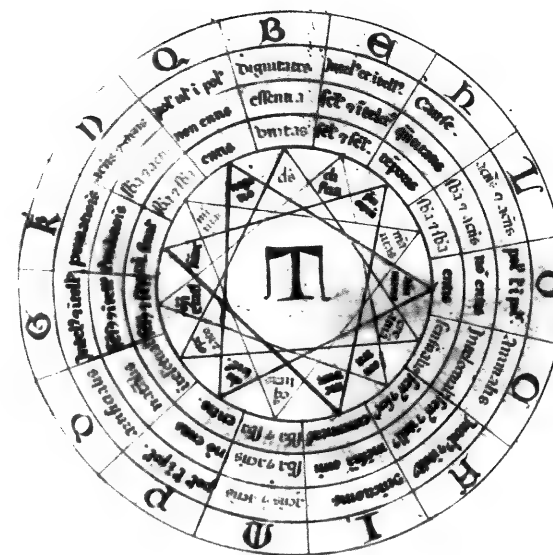


Fig. 7 Pseudo-Lullian "Figura T", Florence Biblioteca Nazionale-Centrale, MS II, iii, 27, f. 230r. (by permission of the Biblioteca Nazionale-Centrale)

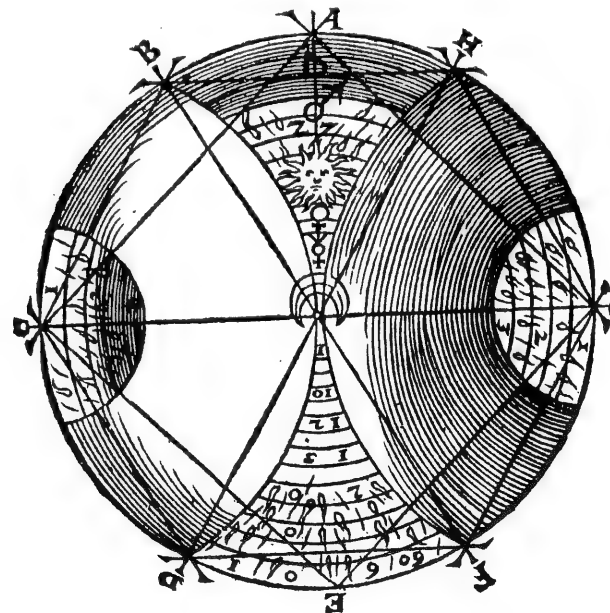


Fig. 8 Joannes Pantheus, "Artis Metallicae Schema" from his "Voarchadumia" in *Theatrum Chemicum* (Strassburg: Zetzner, 1659/61), p. 460. (by permission of the Bodleian Library Shlf. mk: Vet. D3 e. 2-5, 7)

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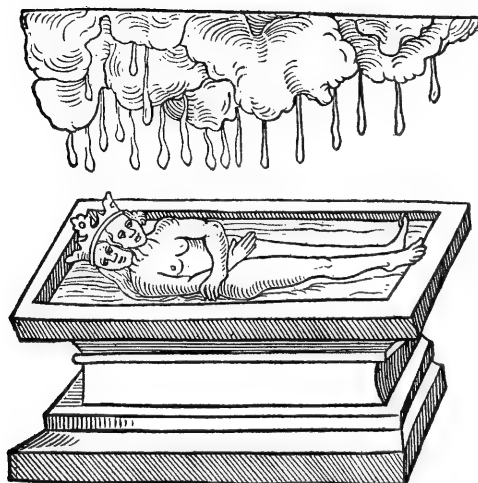


Fig. 9 "Ablutio vel Mundificatio", *Rosarium Philosophorum* (Frankfurt, 1550). (by permission of the British Library)

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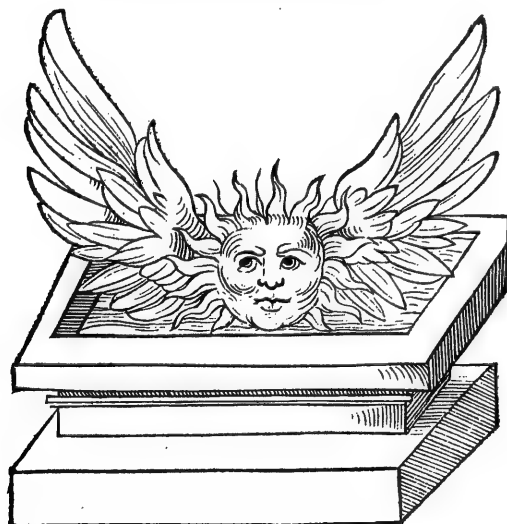


Fig. 10 "Illuminatio", *Rosarium Philosophorum* (Frankfurt, 1550). (by permission of the British Library)

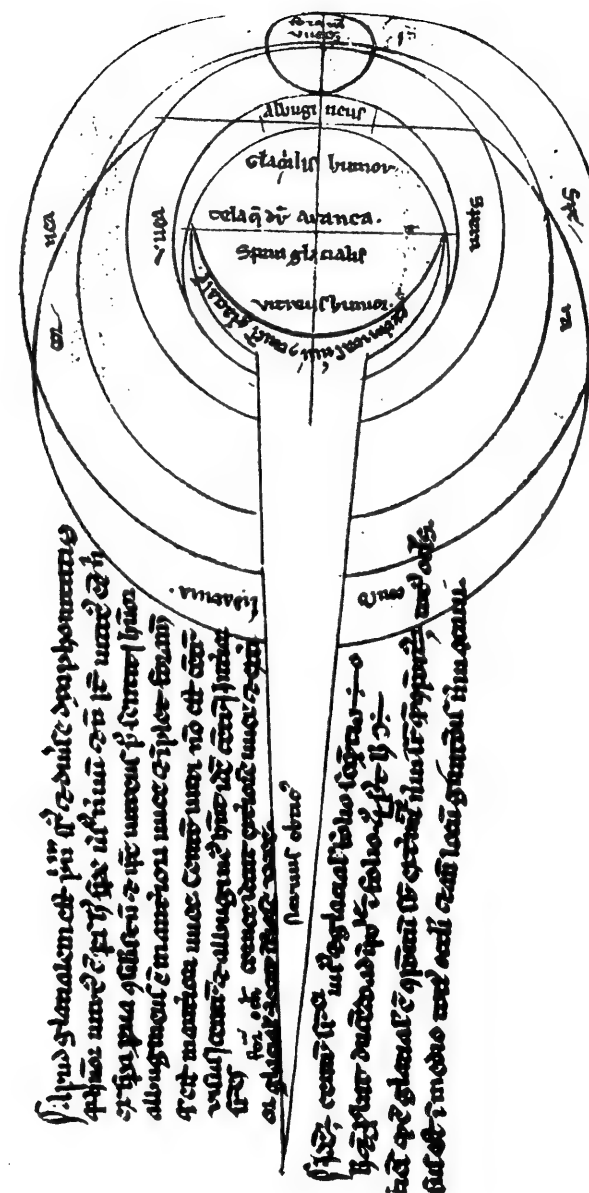


Fig. 11 Alhazen, Diagram of the eye, *De aspectibus*, Edinburgh Royal Observatory, Crawford Library MS Cr. 3. 3, f. 4v (1269). (by permission of the Crawford Library)

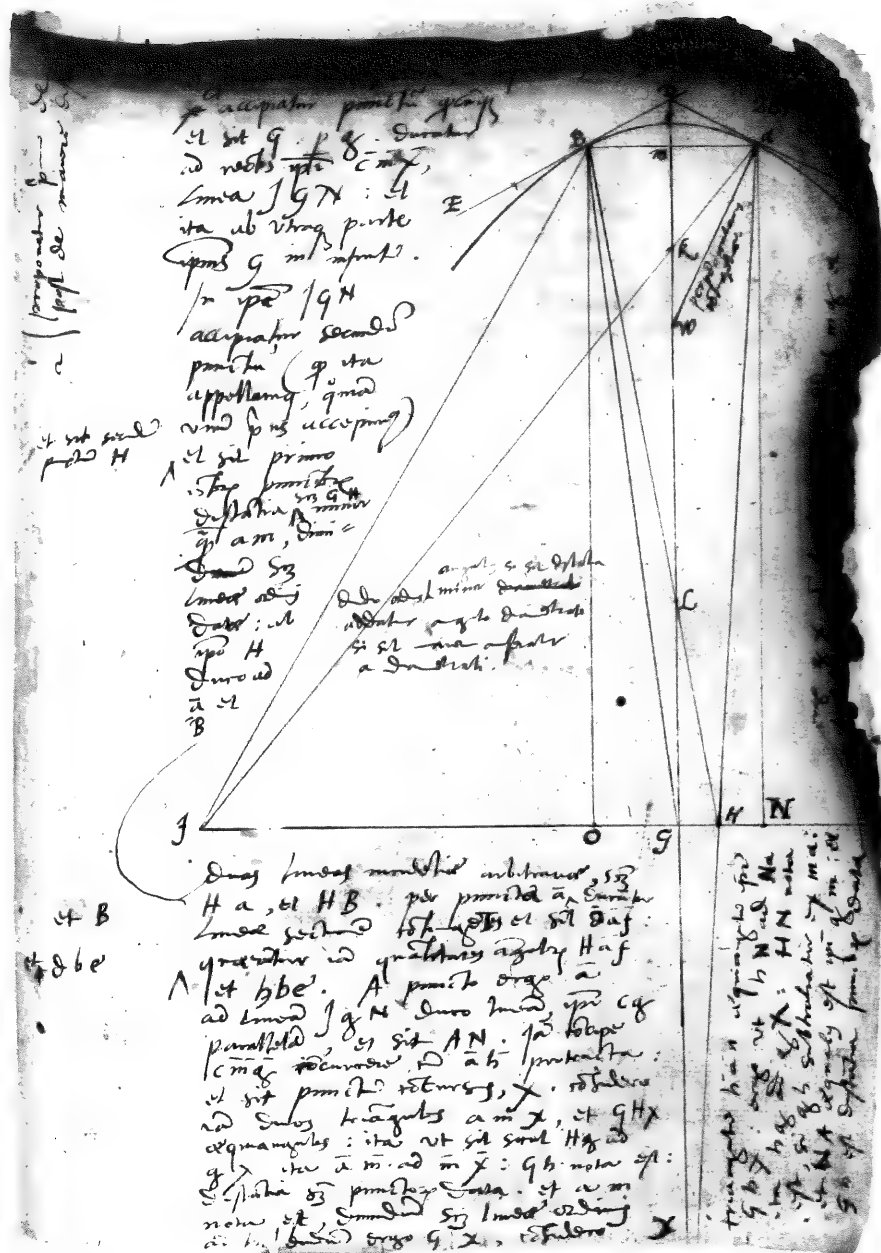


Fig. 12 John Dee, London British Library MS Cotton Vitellius C.VII, art. 5, *De Speculis comburentibus*, f. 282r. (by permission of the British Library)

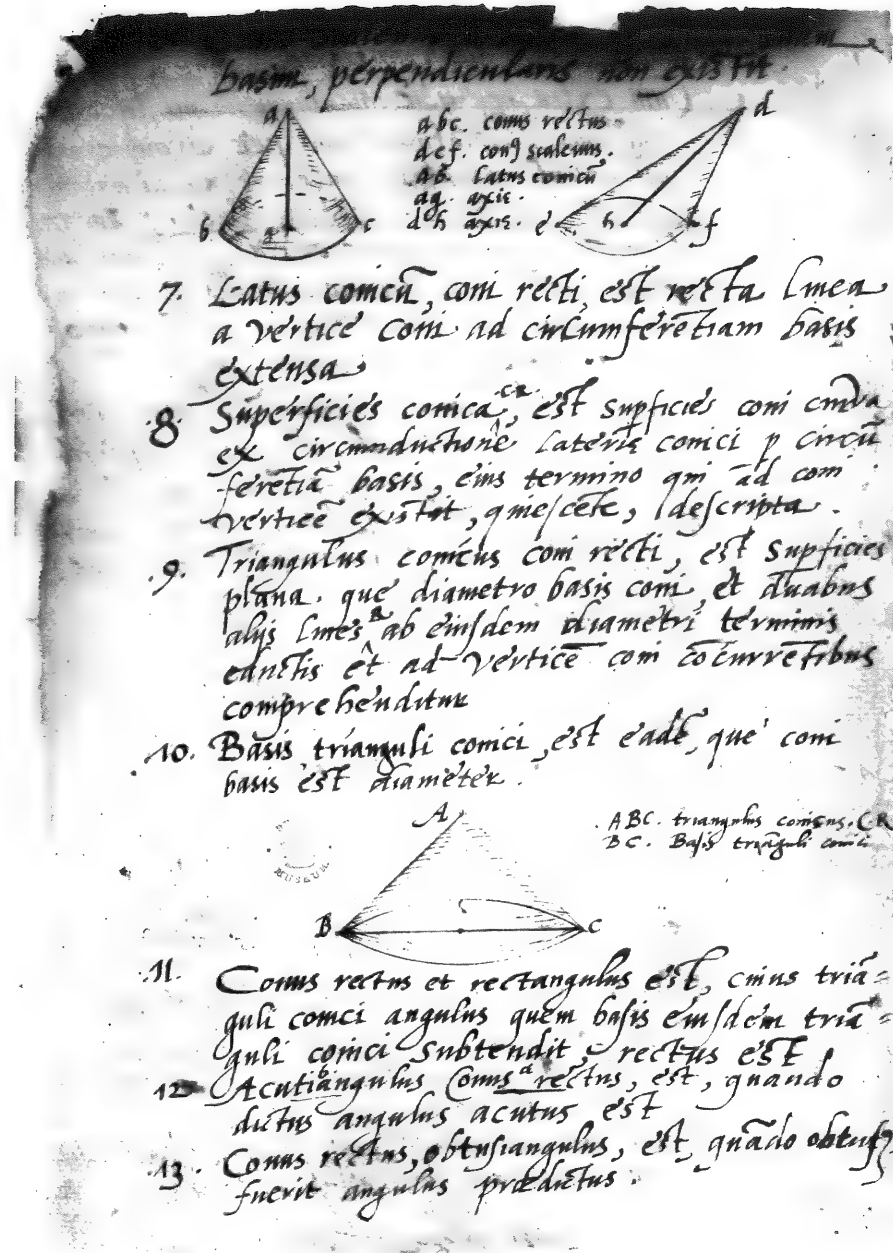


Fig. 13 John Dee, London British Library MS Cotton Vitellius C.VII, art. 5, *De Speculis comburentibus*, f. 284v. (by permission of the British Library)

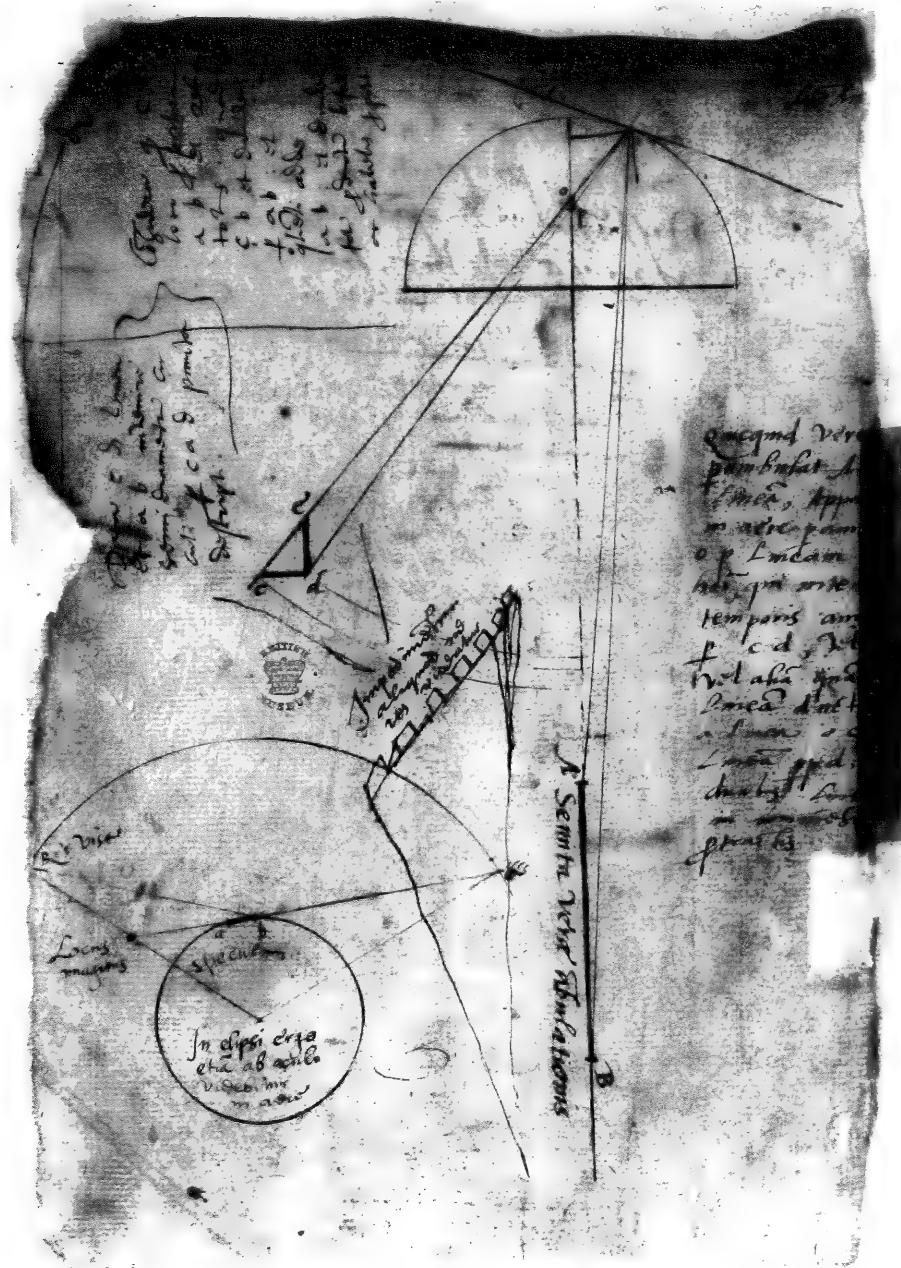


Fig. 14 John Dee, London British Library MS Cotton Vitellius C.VII, art. 5, *De Speculis Comburentibus*, f. 306v. (by permission of the British Library)

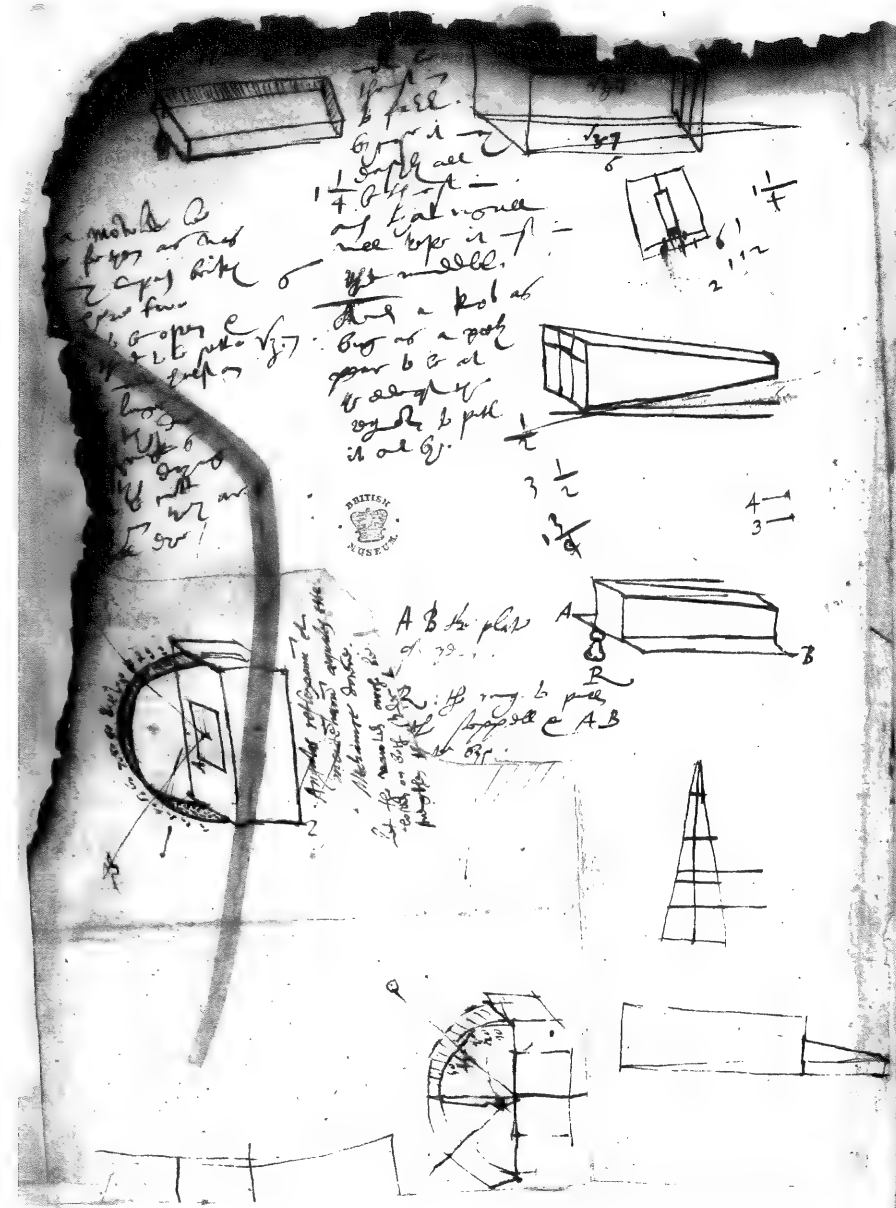


Fig. 15 John Dee, London British Library MS Cotton Vitellius C.VII, art. 5, *De Speculis Comburentibus*, f. 309v. (by permission of the British Library)

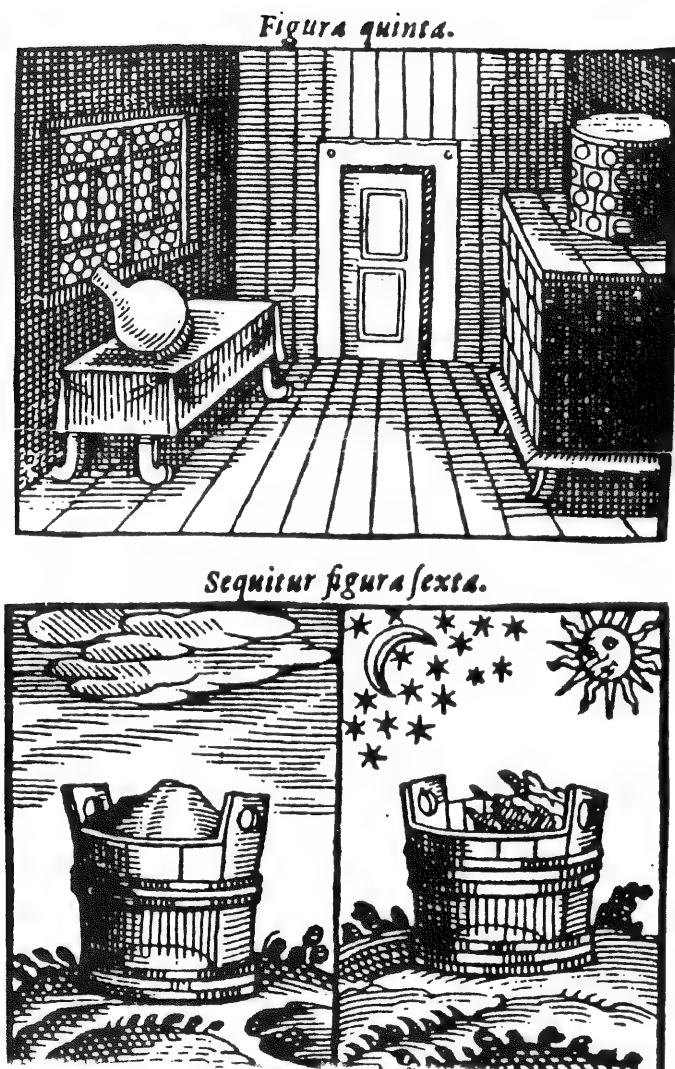


Fig. 16 Andreas Orthelius, "Commentator In Novum Lumen Chymicum Sendivogii" in *Theatrum Chemicum*, VI (Strassburg: Zetzner, 1656), figura quinta, p. 413; figura sexta, p. 415. (by permission of the Bodleian Library Shlf. mk: Vet. D3 e. 2-5, 7)

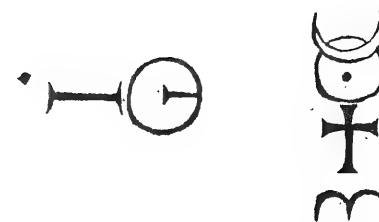


Fig. 17 John Dee, "Monas Hieroglyphica" in *Theatrum Chemicum*, II, (Strassburg: Zetzner, 1609), p. 192. (by permission of the Bodleian Library Shlf. mk: Vet. D3 e. 2-5, 7)

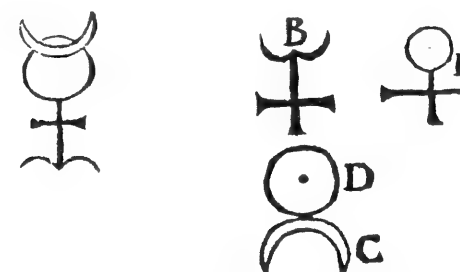


Fig. 18 John Dee, Reversal of the Monas in *Theatrum Chemicum*, II, (Strassburg: Zetzner, 1609), p. 203. (by permission of the Bodleian Library Shlf. mk: Vet. D3 e. 2-5, 7)

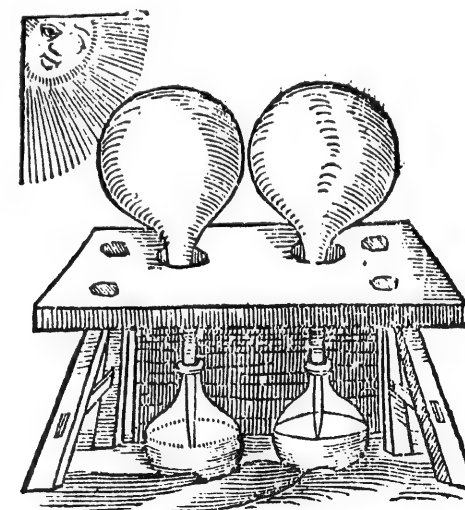


Fig. 19 Giambattista della Porta, solar distillation in *Magia Naturalis* (Naples: Horatius Salviandus, 1589), Bk X, Ch IV, p. 183. (by permission of the Wellcome Trust Medical Photographic Library, London)

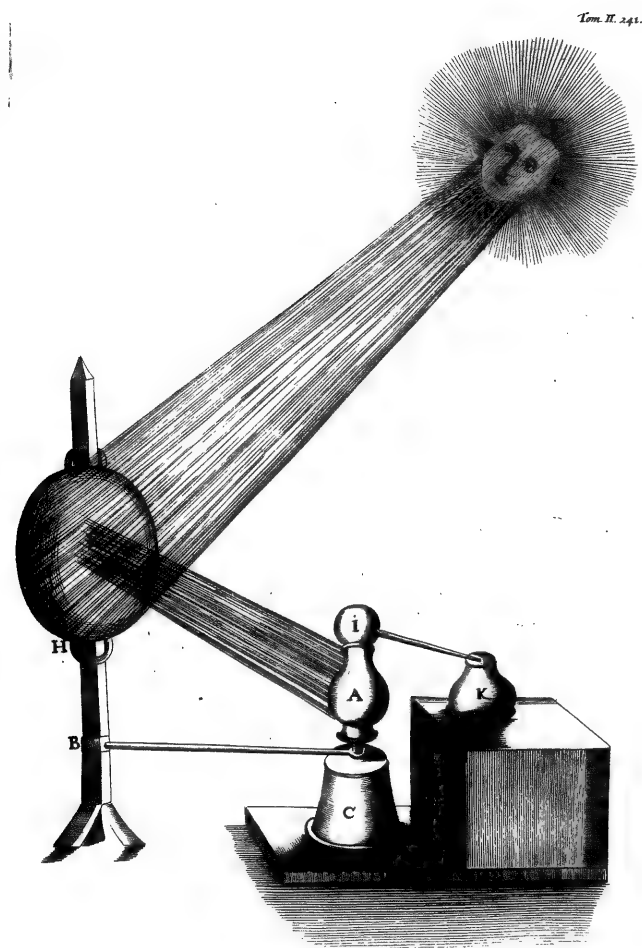


Fig. 20 Athanasius Kircher, solar distillation in *Mundus subterraneus* (Amsterdam, 1665).
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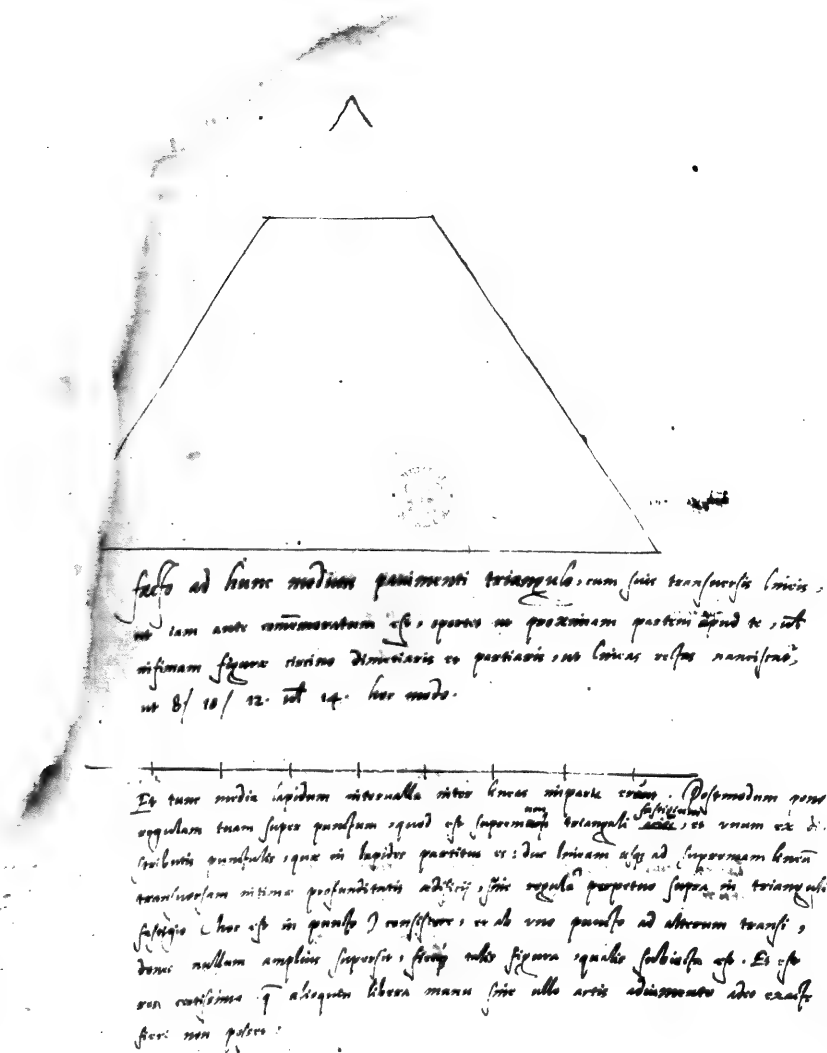


Fig. 21 John Dee, perspectival diagram, London British Library MS Cotton Vitellius
C.VII, f. 18v. (by permission of the British Library)

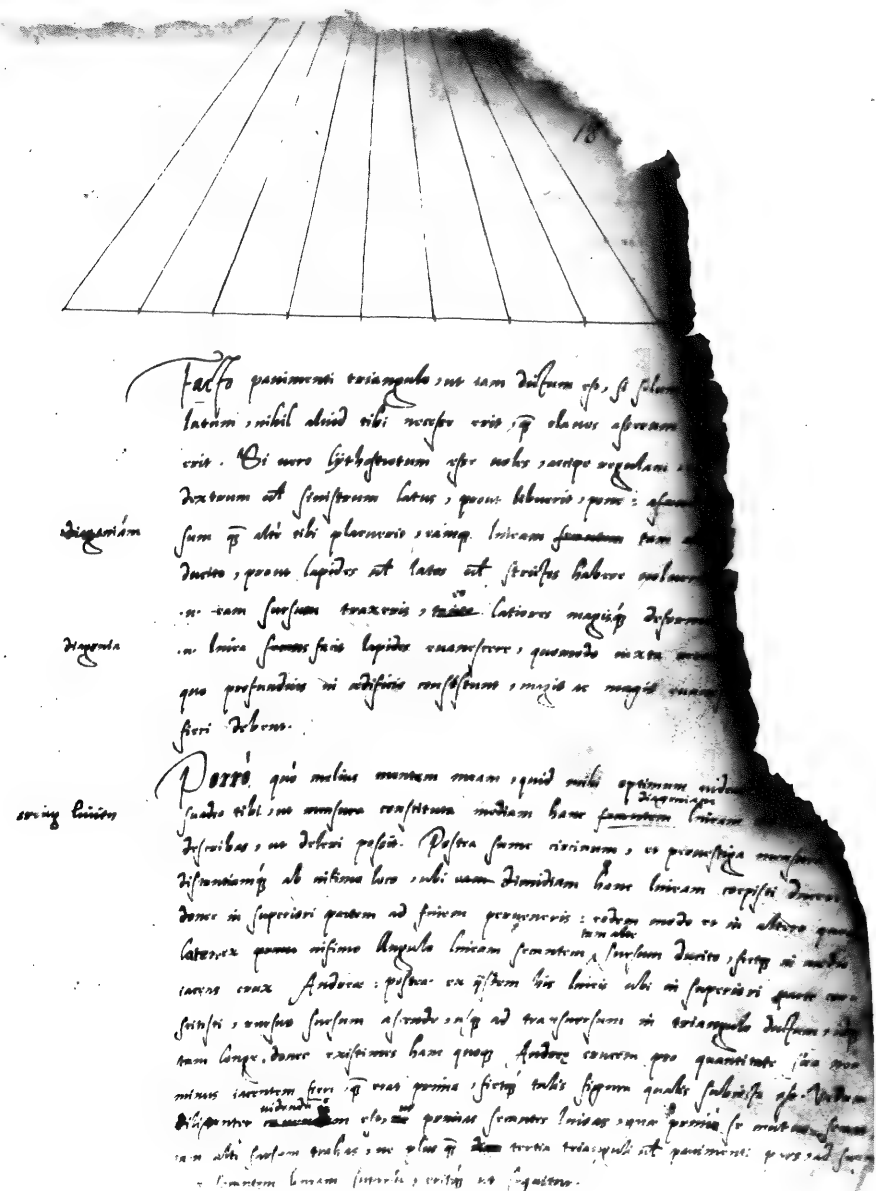


Fig. 22 John Dee, London British Library MS Cotton Vitellius C.VII, f. 19r.
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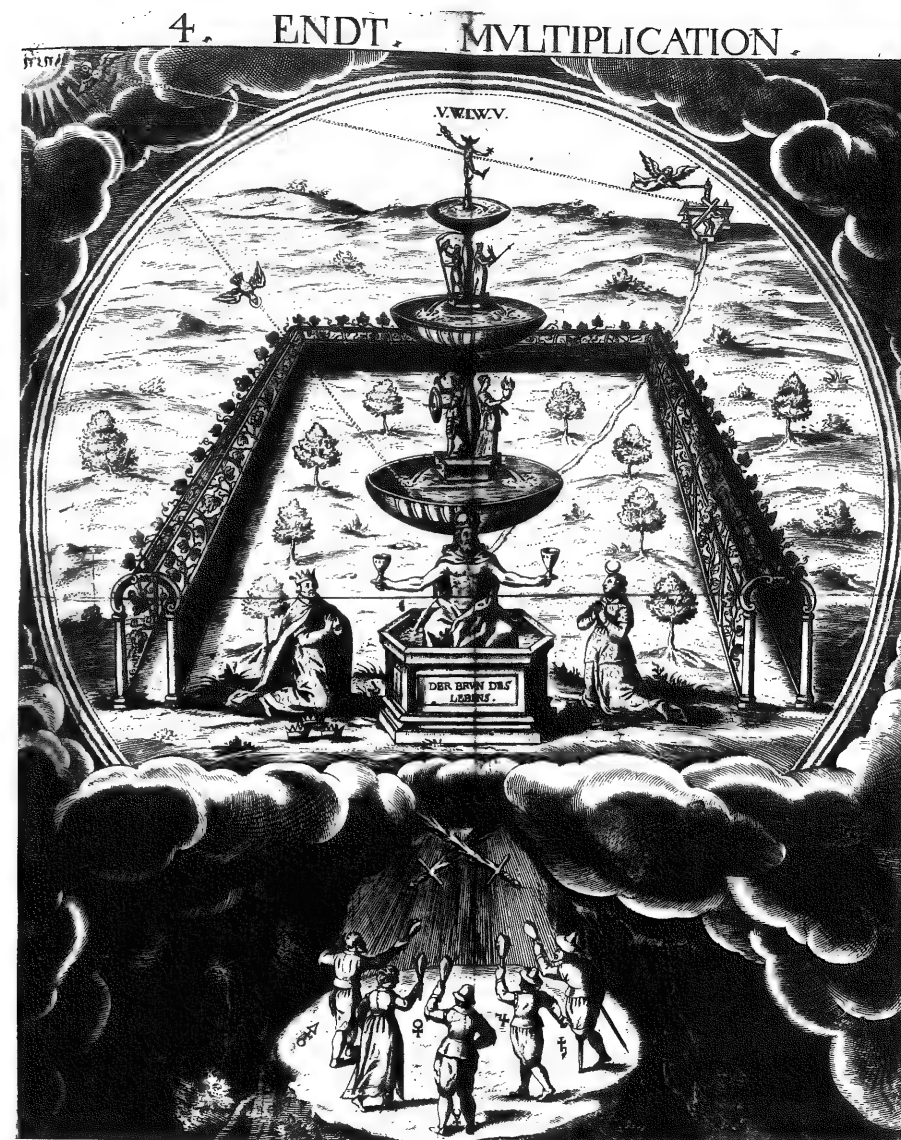


Fig. 23 Stefan Michelspacher, the Fountain of Life, fourth engraving in *Cabala* (Augsburg: Andreas Erffurt, 1654). (by permission of the Wellcome Institute Library, London)

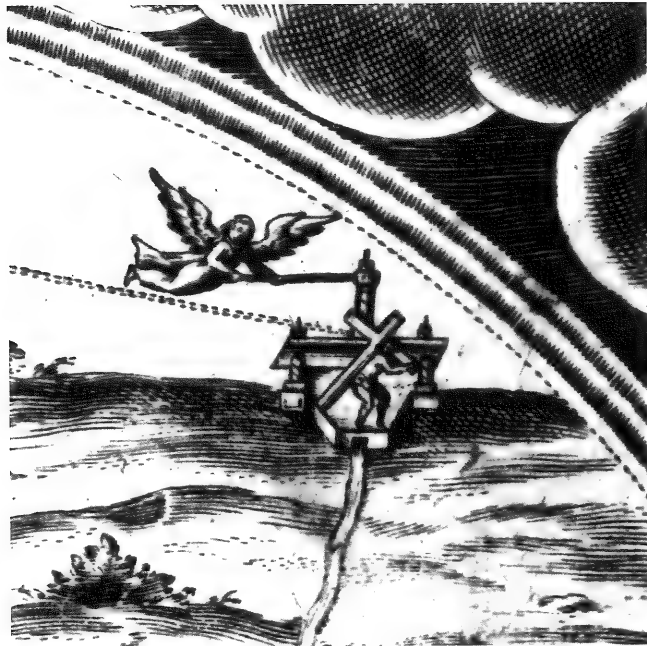


Fig. 24a Stefan Michelspacher, detail from the Fountain of Life (1654).

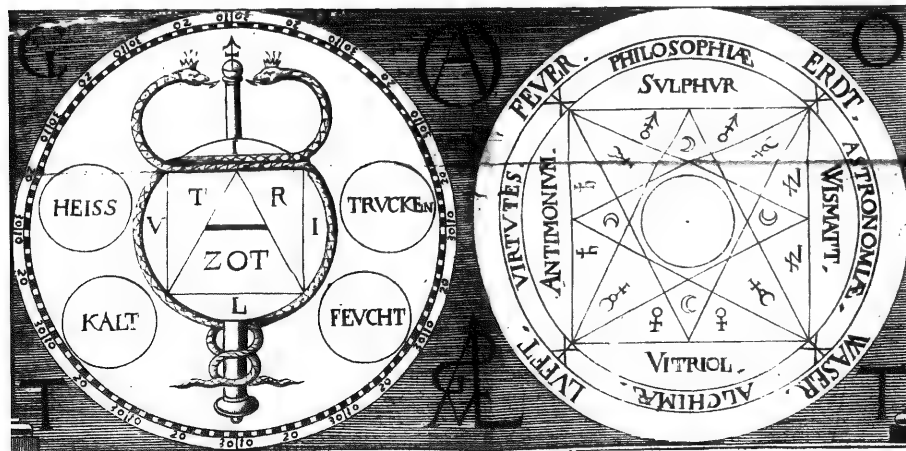


Fig. 24b Stefan Michelspacher, detail from first engraving in *Cabala* (Augsburg: Andreas Erfurt, 1654). (by permission of the Wellcome Trust Medical Photographic Library, London)



Fig. 25 Athanasius Kircher, frontispiece, *Ars Magna Lucis* (Rome, 1646). (by permission of the Wellcome Institute Library, London)



Fig. 26 Heinrich Khunrath, portrait, *Amphiteatrum Sapientiae Aeternae* (Hanover, 1609). (by permission of the Bodleian Library, Shlf. mk: MED. R. I. 9. S)



Fig. 27 Heinrich Khunrath, detail of portrait, *Amphiteatrum Sapientiae Aeternae* (Hanover, 1609). (by permission of the Bodleian Library, Shlf. mk: MED. R. I. 9. S)



Fig. 28 Heinrich Khunrath, emblem of an owl, *Magnesia Catholica* (Magdeburg, 1599). (by permission of the Bodleian Library, Shlf. mk: MED. R. I. 9. S)

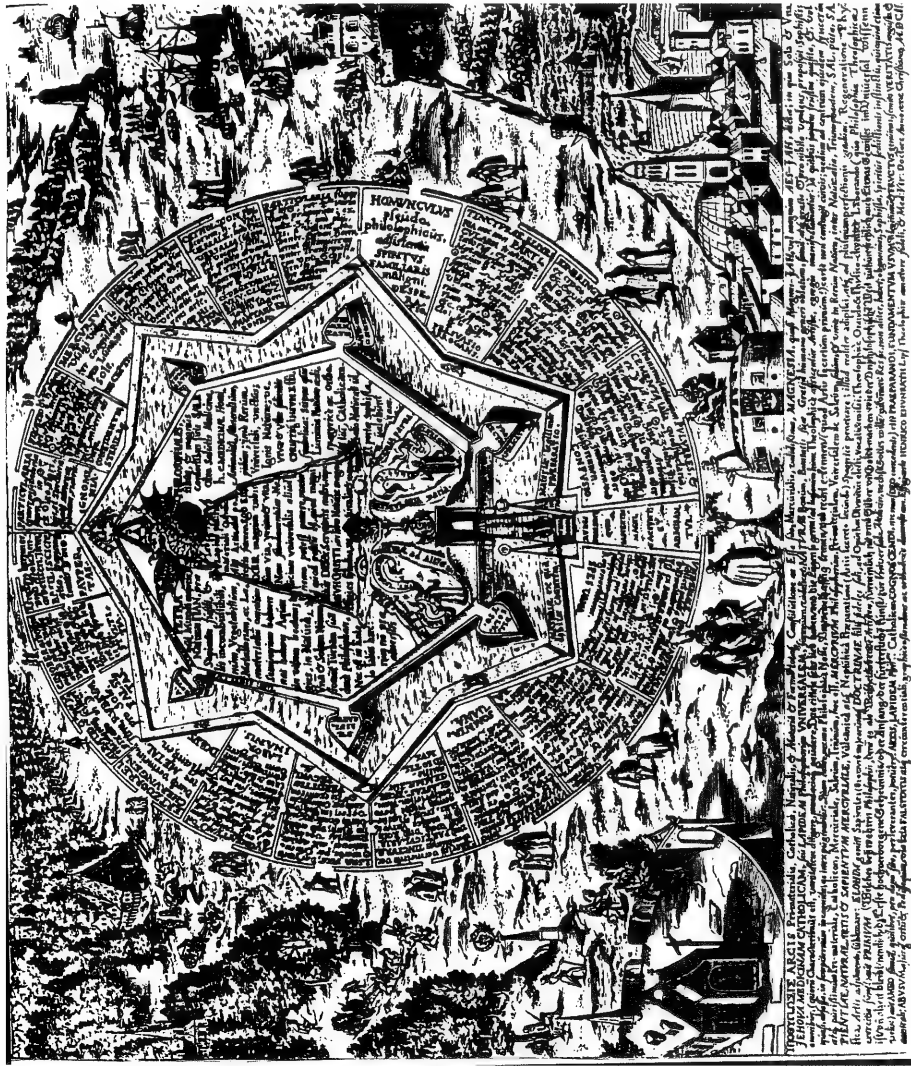


Fig. 29 Heinrich Khunrath, castle (1602), *Amphitheatrum Sapientiae Aeternae* (Hanover, 1609).
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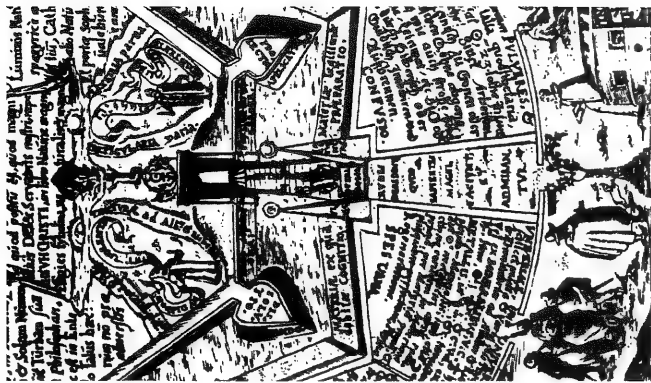


Fig. 30 Heinrich Khunrath, detail
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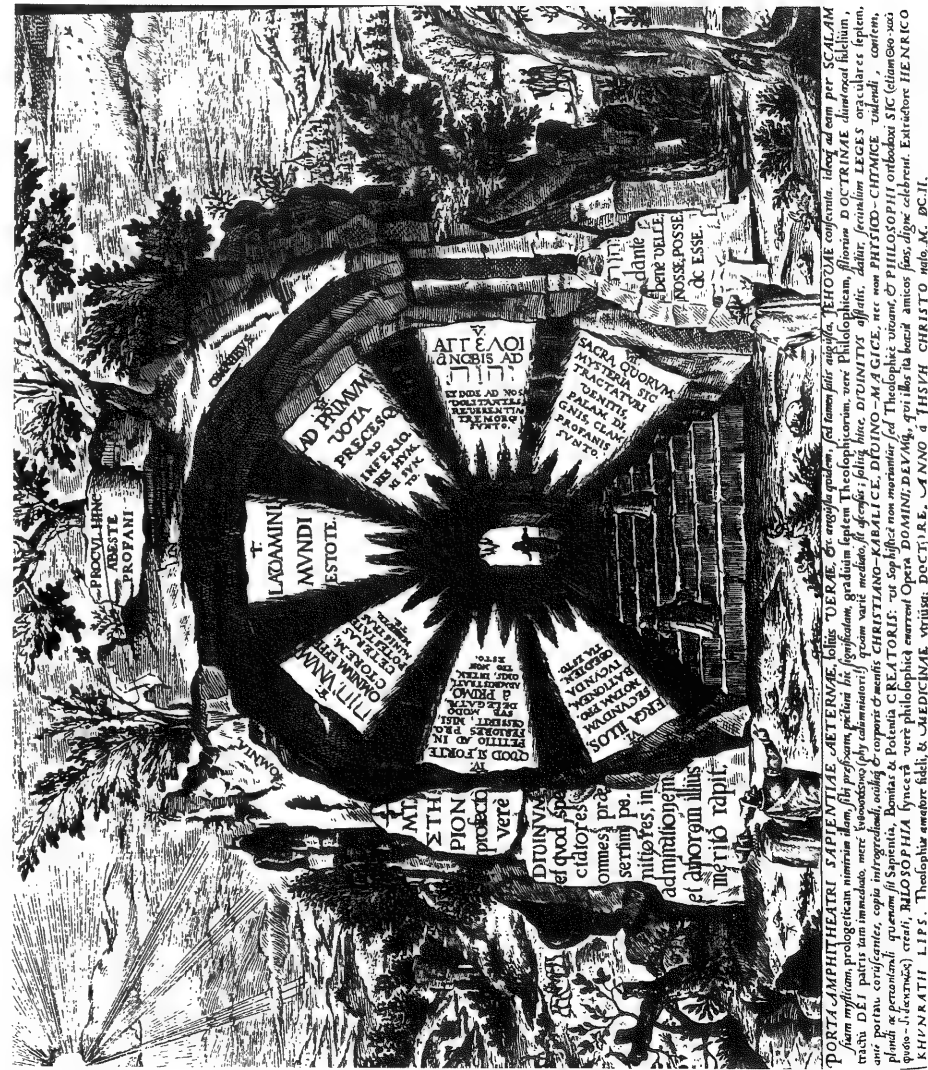


Fig. 31 Heinrich Khunrath, cave of illumination (1602), *Amphitheatrum Sapientiae Aeternae* (Hanover, 1609).
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Fig. 32 Heinrich Khunrath, Anthropos-Christ in a cabbalistic universe (1595), *Amphitheatrum Sapientiae Aeternae* (Hanover, 1609). (by permission of the Bodleian Library, Shlf. mk: MED. R. I. 9. S)

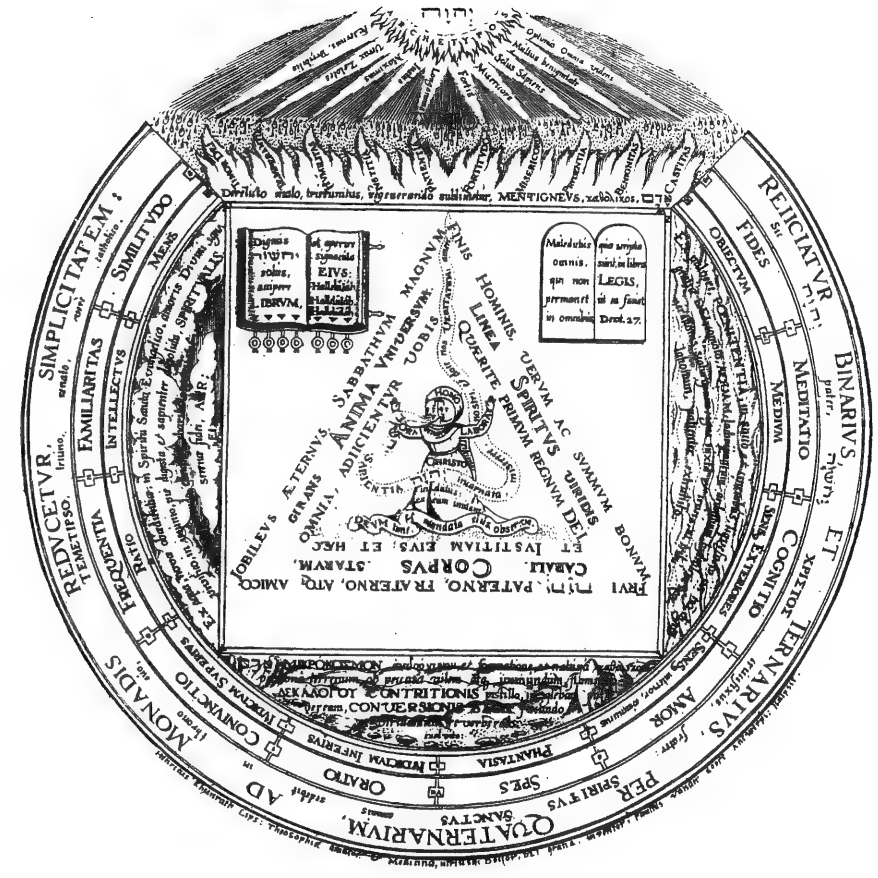


Fig. 33 Heinrich Khunrath, the "Archetypus and Lullian circles" (1595), *Amphitheatrum Sapientiae Aeternae* (Hanover, 1609). (by permission of the Bodleian Library, Shlf. mk: MED. R. I. 9. S)



Fig. 34 Heinrich Khunrath, "Rebis" (1595), *Amphiteatrum Sapientiae Aeternae* (Hanover, 1609). (by permission of the Bodleian Library, Shlf. mk: MED. R. I. 9. S)



Fig. 35 Heinrich Khunrath, the "calumniatores" (1602), *Amphiteatrum Sapientiae Aeternae* (Hanover, 1609). (by permission of the Bodleian Library, Shlf. mk: MED. R. I. 9. S)



Fig. 36 Domenico Veneziano, *Annunciation*, Cambridge Fitzwilliam Museum (mid 15th-C Florentine). (by permission of the Fitzwilliam Museum)

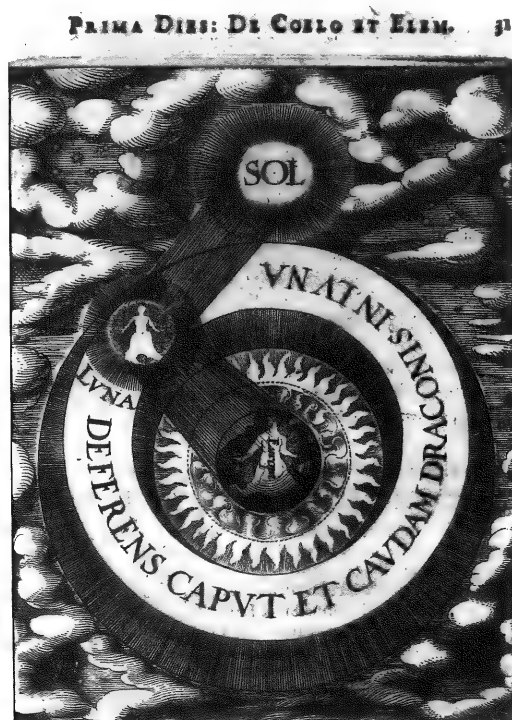


Fig. 37 Michael Maier, catoptrical reflection of the sun in the mirror of the moon, *Septimana Philosophica* (Frankfurt: Luca Jennis, 1620), p. 31. (by permission of the Wellcome Institute Library, London)



Fig. 38 Michael Maier, *Atalanta Fugiens* (Oppenheim: J. T. de Bry, 1619), Emblem XXI. (by permission of the Bodleian Library Shlf. mk: Vet. D2 e. 18)

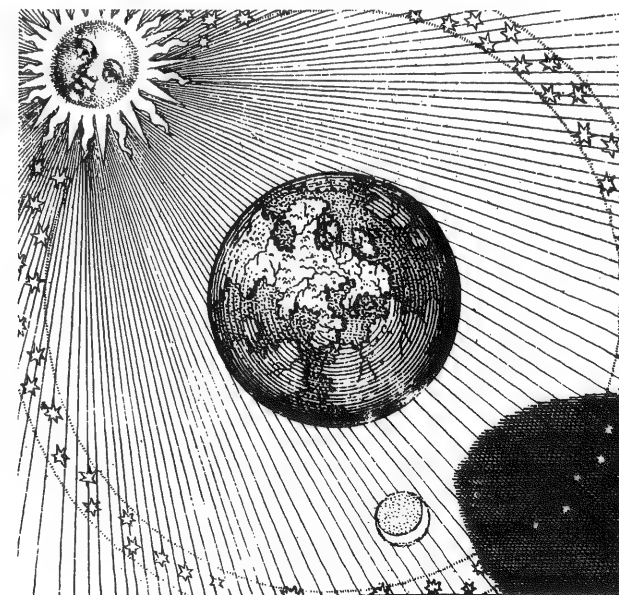


Fig. 39 Michael Maier, *Atalanta Fugiens*, Emblem XLV. (by permission of the Bodleian Library Shlf. mk: Vet. D2 e. 18)

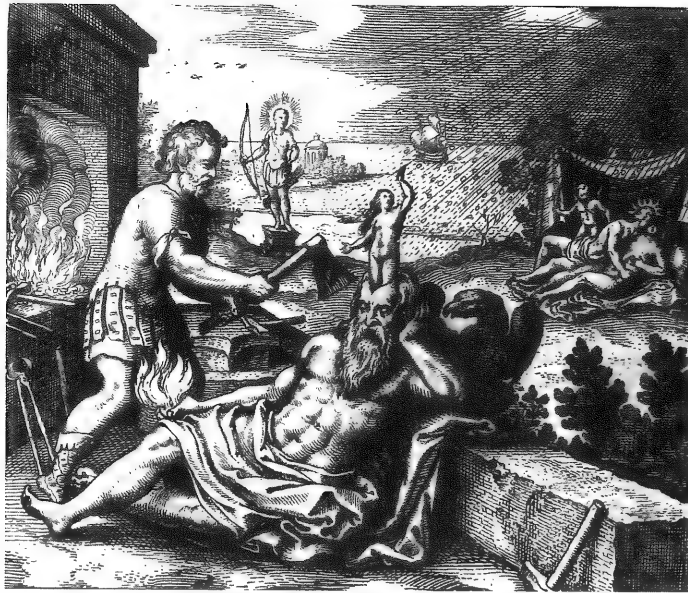


Fig. 40 Michael Maier, *Atalanta Fugiens*, Emblem XXIII. (by permission of the Bodleian Library Shlf. mk: Vet. D2 e. 18)

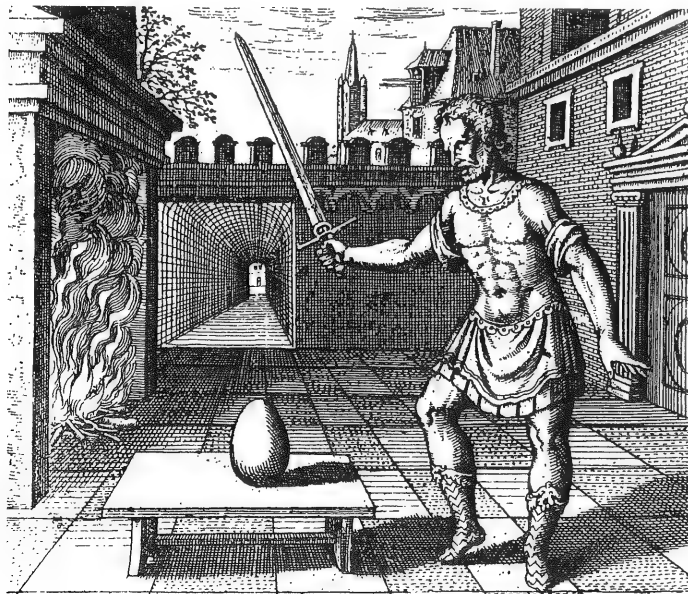


Fig. 41 Michael Maier, *Atalanta Fugiens*, Emblem VIII. (by permission of the Bodleian Library Shlf. mk: Vet. D2 e. 18)

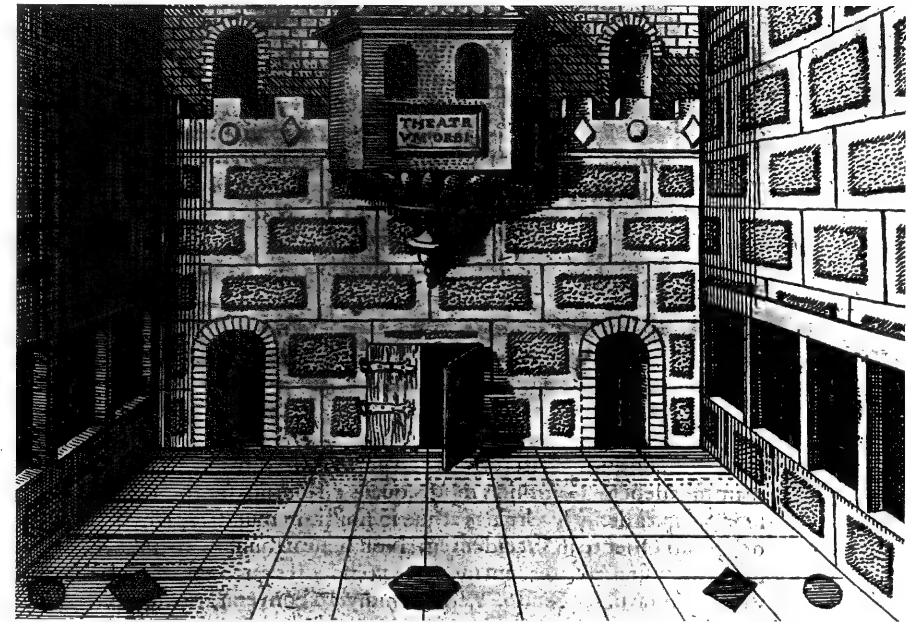


Fig. 42 Robert Fludd, "Theatrum Orbi", *Utriusque Cosmi ... Historia*, 2, "Microcosm" (Oppenheim: J. T. de Bry, 1619), Tract. I, p. 55. (by permission of the Bodleian Library, Shlf. mk: L.1.1(1,2) ART)

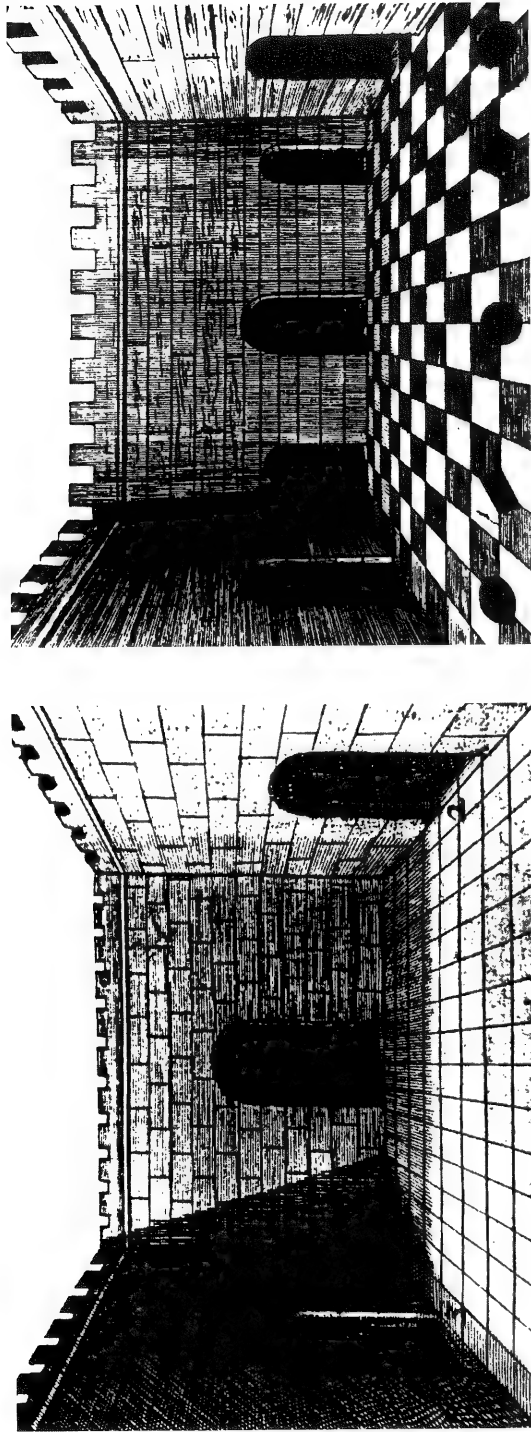


Fig. 43 Robert Fludd, secondary stages, *Utriusque Cosmi ... Historia*, 2, "Microcosm" (Oppenheim: J. T. de Bry, 1619), Tract. I, pp. 58, 64.
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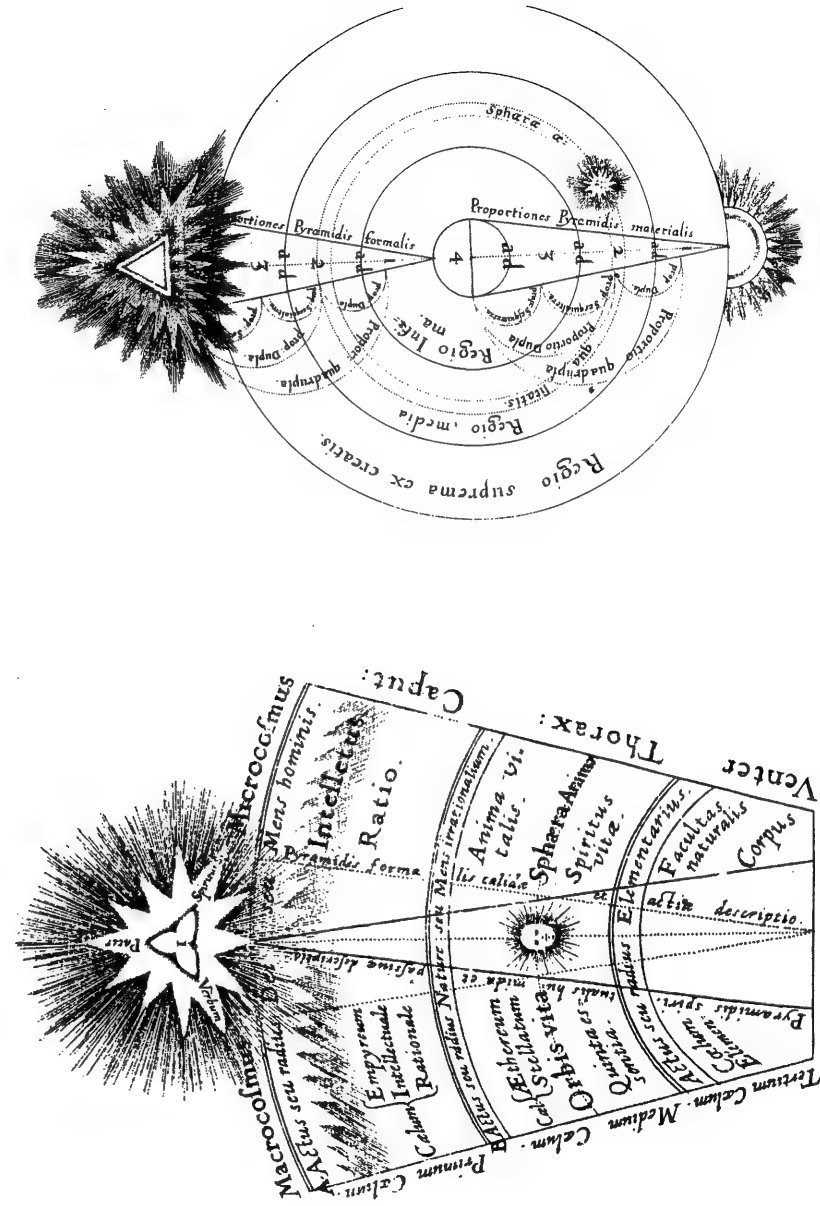


Fig. 44 Robert Fludd, formal and material cones of light, *Utriusque Cosmi ... Historia*, 2, "Microcosm" (Oppenheim: J. T. de Bry, 1619), Tract. I, p. 81 and UCH, 1, "Macrocosm" (Oppenheim: J. T. de Bry, 1617), Tract. I, p. 84.
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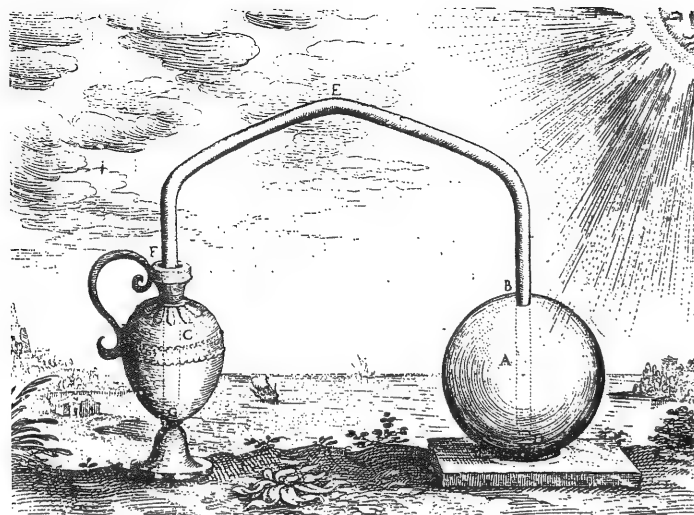


Fig. 45 Robert Fludd, Paracelsian chemical separation by the solar rays, *Utriusque Cosmi ... Historia*, 1, "Macrocosm" (Oppenheim: J. T. de Bry, 1617), Tract. I, p. 31. (by permission of the Bodleian Library, Shlf. mk: L. I. I. (1, 2) ART)

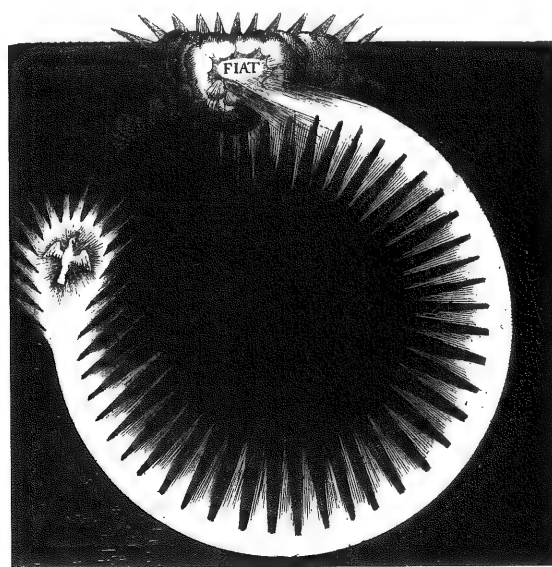


Fig. 46 Robert Fludd, the Holy Spirit creates the world by means of light, *Utriusque Cosmi ... Historia*, 1, "Macrocosm" (Oppenheim: J. T. de Bry, 1617), Tract. I, p. 49. (by permission of the Bodleian Library, Shlf. mk: L. I. I. (1, 2) ART)

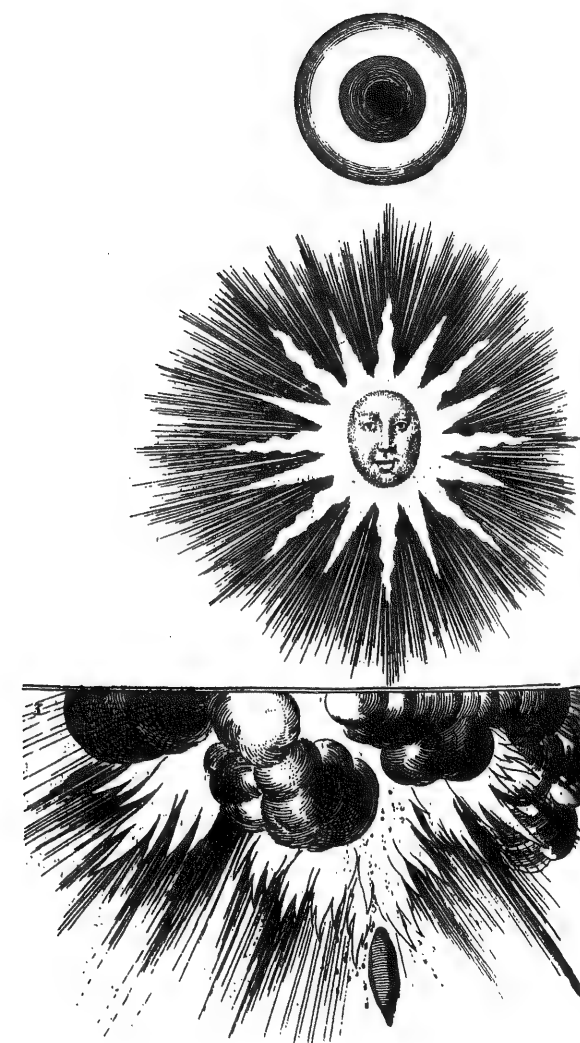


Fig. 47 Robert Fludd, God as the eye, the sun and the thunder, *Utriusque Cosmi ... Historia*, 2, "Microcosm" (Oppenheim: J. T. de Bry, 1619), Tract. I, p. 27. (by permission of The Wellcome Trust Medical Photographic Library, London)

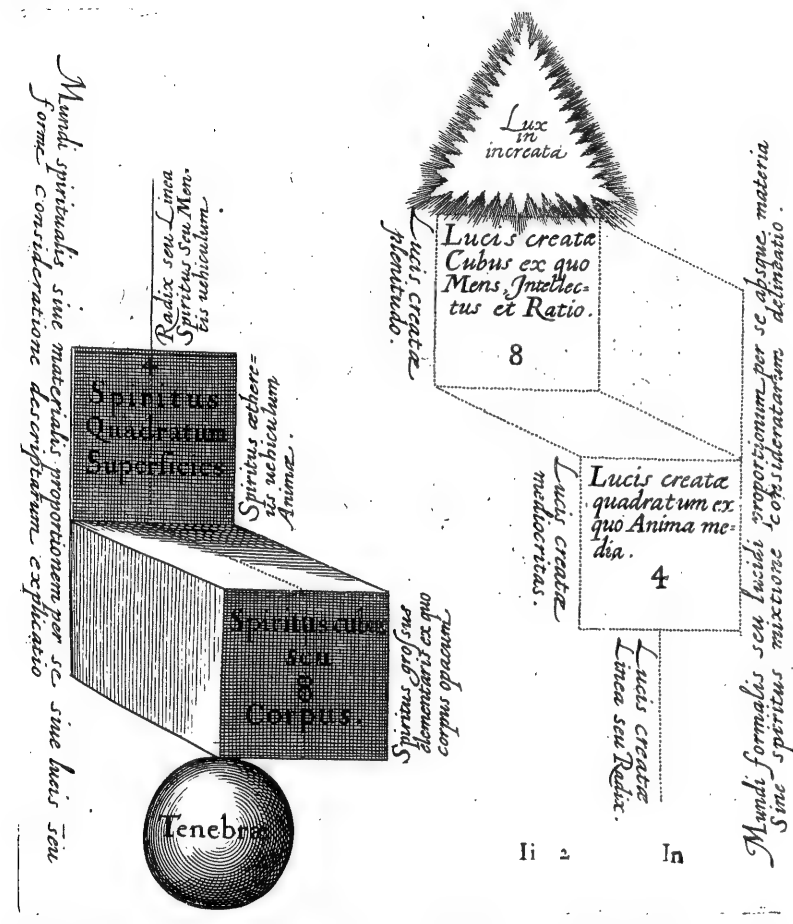


Fig. 48 Robert Fludd, comparison of the geometrical harmonic proportions of the soul, spirit and body, *Utriusque Cosmi ... Historia*, 2, "Microcosm" (Oppenheim: J. T. de Bry, 1619), Tract. I, p. 251. (by permission of The Wellcome Trust Medical Photographic Library, London)

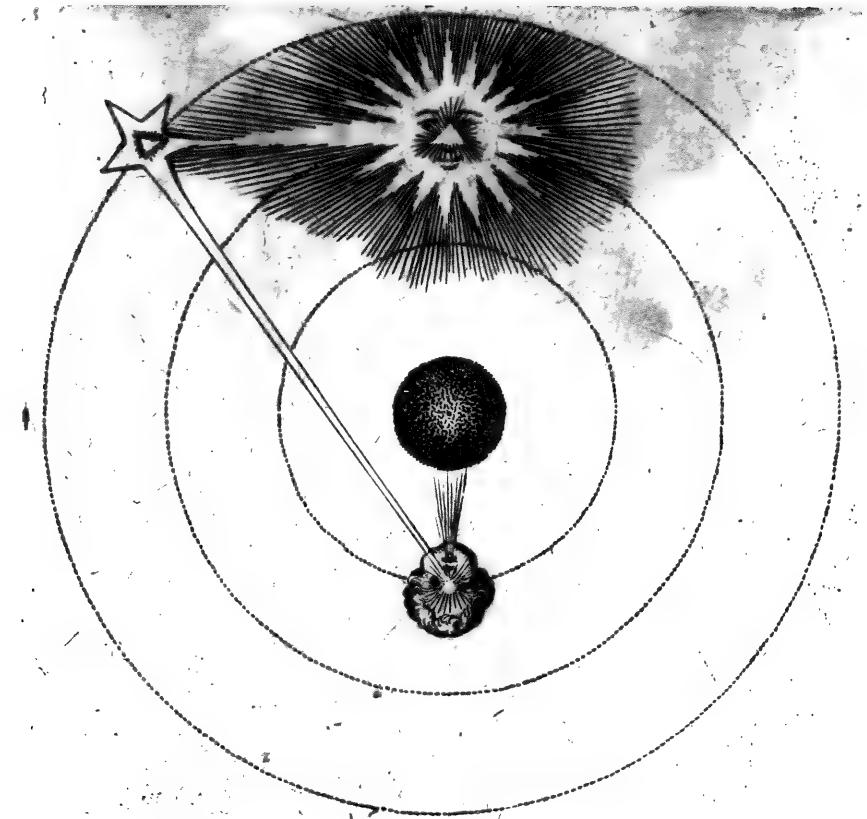


Fig. 49 Robert Fludd, catoptrical conceit, *Philosophia Sacra*, 1 (Frankfurt: J. T. de Bry, 1626), p. 189. (by permission of The Wellcome Trust Medical Photographic Library, London)

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